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C. Simon L. Ommanney

Canadian Correspondent
World Glacier Monitoring Service

Surface Water Division
National Hydrology Research Institute
Environment Canada
Saskatoon, Saskatchewan

# 1980-1985 QUADRENNIAL REPORT TO THE WORLD GLACIER MONITORING SERVICE ON CANADIAN GLACIER VARIATIONS MASS BALANCE AND SPECIAL EVENTS

NHRI Contribution No. 88014

February 1988

## MANAGEMENT PERSPECTIVE

This is the fourth quadrennial report on glacier variations and mass balance studies submitted by Canada to Unesco. It represents the Canadian contribution to maintaining and increasing knowledge of the world's glaciers and provides a basic data set to scientists wishing to understand, explain and model that portion of the hydrological cycle.

D.K. MacKay, Chief,
Surface Water Division
National Hydrologie Research Institute

## PERSPECTIVE DE GESTION

Voici le quatrième rapport quadrennial que le Canada a présenté à l'Unesco au sujet des variations glaciaires et des bilans massiques. Il s'agit en fait de la contribution du Canada à l'égard de la mise à jour et de l'approfondissement des connaissances que nous possédons sur les glaciers du monde. Il présente un ensemble de données de base aux scientifiques qui désirent mieux comprendre et expliquer cette partie du cycle hydrologique et en faire un modèle.

D.K. MacKay, chef,
Division des eaux de surface
Institut national de recherche en hydrologie

## ABSTRACT

This compilation has been prepared in response to a requirement by the World Glacier Monitoring Service that National Correspondents submit quadrennial reports on the state of the nation's glaciers. The following data sheets are included: general information (55 glaciers); glacier variations (17 glaciers); mass balance summaries (21 glaciers); mass balance tabulations by altitude bands (17 glaciers); volumetric change (1 glacier); sources of hydrometeorological observations (10 glaciers); reports on special glacier events (12 glaciers); a comprehensive bibliography for 1980-1985; and a list of investigators.

The mountain water resources of British Columbia and Alberta were further depleted during the period of observation. About a third of the glaciers showed positive balances in 1982/83 and 1983/84, but the 1984/85 balance year was strongly negative for all glaciers investigated.



## RÉSUMÉ

Les présentes données ont été compilées conformément à une exigence du World Glacier Monitoring Service selon laquelle les correspondants nationaux doivent présenter des rapports quadriennaux sur l'état des glaciers de leur pays. Vous trouverez ci-joint des feuilles de données portant notamment sur les renseignements généraux (55 glaciers), les variations glaciaires (17 glaciers), les bilans massiques (21 glaciers), les tableaux des bilans massiques en fonction des bandes d'altitude (17 glaciers), les changements volumétriques (1 glacier), les sources des observations hydrométéorologiques (10 glaciers), les rapports sur les phénomènes glaciaires spéciaux (12 glaciers) et une bibliographie exhaustive pour les années 1980 à 1985, ainsi qu'une liste des chercheurs.

Au course de la période d'observation, nous avons remarqué que les réserves d'eau de montagne de la Colombie-Britannique et de l'Alberta ont continué de s'appauvrir. En 1982-1983 et en 1983-1984, environ le tiers des glaciers ont eu des blians positifs, mais tous les glaciers ayant fait l'objet de recherche en 1984-1985 ont obtenu un bilan négatif.

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## 1.0: INTRODUCTION AND ACKNOWLEDGEMENTS

This is the fourth quadrennial report on glacier variations and mass balance studies submitted by Canada to Unesco. It represents the Canadian contribution to maintaining and increasing knowledge of the world's glaciers and provides a basic data set to scientists wishing to understand, explain and model that portion of the hydrological cycle. Previous reports were submitted to the Permanent Service on the Fluctuations of Glaciers (PSFG); part of Unesco's Federation of Astronomical and Geophysical Services. Recently this Service has been amalgamated with the Temporary Technical Secretariat on the World Glacier Inventory to form a new World Glacier Monitoring Service (WGMS), to which this report is directed. The sponsoring agencies for this Service are UNEP, UNESCO, FAGS, IUGG, IASH and ICSI. The Department of the Environment, wishing to further science and the exchange of information at both the national and international levels, is committed to collaborating with the WGMS and to this end has provided support to the Canadian Correspondent.

The report follows the same sequence used in the earlier one. Section 2 provides general information on the glaciers reported on in the other sections. Complete data sheets are included even if they contain the same information as that in the previous report in order that those using this report alone have immediate access to all the necessary information. Section 3 gives information on glacier variations. By using geomorphological, photographic and photogrammetric techniques it has been possible to reconstruct earlier glacier snout positions and determine variations in a slightly different manner to that recommended. Hence, some additional information has been provided. Section 4 lists the available mass balance data. Some data have not been reported but the principal investigators have been identified should readers wish to track them down. Section 5 gives the detailed mass balance values by elevation band. Section 6, on the volumetric change of glaciers is substantially reduced from previous years because of the termination of the Water Survey of Canada investigations. Section 7 reports on the availability of hydrometeorological data; information that was included previously as part of the mass balance data sheet.

In response to demands from the user community a new report, Section 8, on special glacier events has been included. A comprehensive bibliography, Section 9, is attached that should give readers access to papers and reports published from 1980-1985 with yet more detailed information. References to work published since then are available from the National Correspondent. Finally, one other section has been included with the names and addresses of those chiefly involved in glacier studies and from whom input for this report was requested.

Information contained in the previous report (Ommanney, 1984b) was published by the PSFG in Volume IV of their quadrennial report series entitled "Fluctuations of Glaciers, 1975-1980" (Haeberli, 1985).

Readers aware of significant errors or omissions are asked to advise the Canadian Correspondent with a copy to the WGMS office at the addresses below:-


Dr Wilfried Haeberli,
Director, WGMS,
Section of Glaciology,
VAW/ETHZ, ETH-Zentrum,
8092 Zürich, Switzerland

C. Simon L. Ommanney,
Canadian WGMS Correspondent,
National Hydrology Research Institute,
11, Innovation Boulevard,
Saskatoon, Saskatchewan, S7N 3H5, Canada



Sincere thanks are extended to all those individuals who have contributed information to this report. Special thanks go to Karl Ricker for the major contribution he has made to the section on glacier variations and to Oleg Mokievsky-Zubok who has made a similar effort with regard to the glacier mass balance section.

## 2.0: GENERAL INFORMATION ON THE OBSERVED GLACIERS

Data on individual glaciers in this section are mostly derived from the Canadian National Topographic Map Series (NTS) at a scale of 1:50,000 in conjunction with air photos.

All of Canada has been flown with low level aerial photography suitable for mapping at a scale of 1:50,000. In several cases special air photo missions have been organized for the mapping of glaciers at a scale of 1:10,000 or better. Flight line information and the individual prints are available from the:

National Air Photo Library,
Surveys and Mapping Branch,
615, Booth Street,
Ottawa, Ontario, K1A 0E9

The Surveys and Mapping Branch is striving to complete its mapping of Canada at a scale of 1:50,000 and update the 1:250,000 scale NTS sheets. Having a somewhat lower priority, many of the mountain and glacierized areas of Canada have yet to be mapped at the larger scale. Maps at all scales and indices are available from the:

Canada Map Office,
Surveys and Mapping Branch,
130, Bentley Avenue,
Ottawa, Ontario, K1A 0E9

In most cases, the individual compiling the data sheet is the person in charge of the glacier data and from whom it should be requested.

The Glacier Number (former PSFG number) allocation for Canadian glaciers has been based on an initial alphabetic division using the first two digits, i.e. A = 01.. to Z = 26.. and with unnamed features starting at 50... The last two digits have been assigned on a scale of 1-99 based on the relative position of a glacier name within its particular alphabetic block, as determined from the latest listing of named glaciological features in Canada.

General information sheets are provided for all glaciers for which data in any of the relevant categories have been included even if these sheets were contained in the previous Canadian PSFG report. In some cases, minor changes have been made to the original sheets, in others, new data have been provided. In a few cases, data sheets are included in this section for glaciers on which studies have commenced but for which no data are yet available. The intent is to place the name of this glacier on record as being one which is under investigation. Data may be included in the next WGMS report.

The data sheets were usually compiled by the principal investigators and were checked and recompiled by Simon Ommanney of the National Hydrology Research Institute.

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0110
3. Glacier number (in already published inventories):

4. Glacier name: ABRAHAM
5.* Geographical location (general): LABRADOR
6.* Geographical location (more specific): TORNGAT MTS.

7.* Geographical coordinates
- Latitude: 58° 56' N
- Longitude: 63° 32' W

8.* Orientation
- Accumulation area: NW
- Ablation area: NW

9.* Highest elevation
- m a.s.l.: 1150
- measurement year: 19

10.* Median elevation
- m a.s.l.: 900
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 690
- measurement year: 19

12.* Area
- km²: .73
- measurement year: 1981

13.* Length
- km: 1.2
- measurement year: 19

14.* Rough classification: 648

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: C.S.L. Ommanney

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0133
3. Glacier number (in already published inventories):

4. Glacier name: ALEXANDER
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): ISKUT RIVER

7.* Geographical coordinates
- Latitude: 57° 06' N
- Longitude: 130° 49' W

8.* Orientation
- Accumulation area: NE
- Ablation area: NE

9.* Highest elevation
- m a.s.l.: 1820
- measurement year: 1979

10.* Median elevation
- m a.s.l.: 1670
- measurement year: 1979

11.* Lowest elevation
- m a.s.l.: 1190
- measurement year: 1980

12.* Area
- km²: 5.83
- measurement year: 1979

13.* Length
- km: 5.30
- measurement year: 1980

14.* Rough classification: 538

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, May 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0148
3. Glacier number (in already published inventories):

4. Glacier name: ANDREI
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): ISKUT RIVER

7.* Geographical coordinates
- Latitude: 56° 56' N
- Longitude: 130° 59' W

8.* Orientation
- Accumulation area: SE
- Ablation area: E

9.* Highest elevation
- m a.s.l.: 2190
- measurement year: 1978

10.* Median elevation
- m a.s.l.: 1280
- measurement year: 1978

11.* Lowest elevation
- m a.s.l.: 610
- measurement year: 1980

12.* Area
- $km^2$: 92.14
- measurement year: 1978

13.* Length
- km: 22.50
- measurement year: 1980

14.* Rough classification: 428

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | 2 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, May 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD
2. Glacier number (former PSFG number) 0170
3. Glacier number (in already published inventories)

4. Glacier name APE
5.* Geographical location (general) COAST MOUNTAINS
6.* Geographical location (more specific) MOEICK RIVER

7.* Geographical coordinates
- Latitude 52° 05' N
- Longitude 126° 13' W

8.* Orientation
- Accumulation area 2 basins NE & N
- Ablation area NE

9.* Highest elevation
- m a.s.l. 2650
- measurement year 1964

10.* Median elevation
- m a.s.l. 2070
- measurement year 1964

11.* Lowest elevation
- m a.s.l. 1395
- measurement year 1947

1947 aerial photography

12.* Area
- km² 4.6
- measurement year 1964

13.* Length
- km 3.7
- measurement year 1964

14.* Rough classification 218

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 2 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks Neve shared with Fyles Glacier was previously overestimated. Additional aerial photography has clarified the delineation of this glacier.
17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0187
3. Glacier number (in already published inventories):

4. Glacier name: ATAVIST
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): NOEICK RIVER

7.* Geographical coordinates — Latitude: 51° 08' N
Map 93D/1 shows this as Borealis Gl. but it is only that portion draining into Gyllenspatz Cr. The portion draining into Noeick R. at Ape Lake is Atavist Gl. (formerly known as Aurora Gl. in the climbing guide books.
Longitude: 126° 13' W

8.* Orientation — Accumulation area: SE
Ablation area: SW

9.* Highest elevation: 2350 m a.s.l.
measurement year: 1964

10.* Median elevation: 1980 m a.s.l.
measurement year: 1964

11.* Lowest elevation: 1570 m a.s.l.
measurement year: 1964

12.* Area: 5.53 km²
measurement year: 1964

13.* Length: 4.70 km
measurement year: 1964

14.* Rough classification: 428

15. Number of data sheets submitted: formerly 515

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 2 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Borealis & Atavist joined by ice saddle (1920 m). At turn of century Atavist coalesced with Fyles Gl. to south.

Refs: GSC Open File 1139, Cdn Alpine Journal 1986.

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CO

2. Glacier number (former PSFG number): 0021/0

3. Glacier number (in already published inventories):

4. Glacier name: BARNES ICE CAP

5.* Geographical location (general):

6.* Geographical location (more specific): BAFFIN ISLAND

7.* Geographical coordinates
- Latitude: 69° 45' W
- Longitude: 72° 00' W

8.* Orientation
- Accumulation area:
- Ablation area:

9.* Highest elevation
- m a.s.l.: 920
- measurement year: 19

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 420
- measurement year: 19

12.* Area
- km²: 500.00
- measurement year: 19

13.* Length
- km: .
- measurement year: 19

14.* Rough classification:

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks

17. Data sheet compiled by: R. LeB. Hooke.

* Do not complete if the information in Volume IV (Table A) is still valid

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0234
3. Glacier number (in already published inventories):

4. Glacier name: BENCH
5.* Geographical location (general): HOMATHKO RIVER
6.* Geographical location (more specific): MT. WADDINGTON

7.* Geographical coordinates — Latitude: 51° 26' N
Longitude: 124° 55' W

8.* Orientation — Accumulation area: SW
Ablation area: NW

9.* Highest elevation: 2740 m a.s.l. — measurement year: 1980
10.* Median elevation: 2000 m a.s.l. — measurement year: 1980
11.* Lowest elevation: 1480 m a.s.l. — measurement year: 1984

12.* Area: 10.51 km² — measurement year: 1984
13.* Length: 8.00 km — measurement year: 1980

14.* Rough classification: 648

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 2 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, September 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0265
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | BOUNDARY |
| 5.* Geographical location (general) | | ROCKY MOUNTAINS |
| 6.* Geographical location (more specific) | | SASKATCHEWAN R. |
| 7.* Geographical coordinates | Latitude | 52° 12' N |
| | Longitude | 117° 12' W |
| 8.* Orientation | Accumulation area | NE |
| | Ablation area | NE |
| 9.* Highest elevation | m a.s.l. | 3320 |
| | measurement year | 1985 |
| 10.* Median elevation | m a.s.l. | 2750 |
| | measurement year | 1985 |
| 11.* Lowest elevation | m a.s.l. | 2365 |
| | measurement year | 1985 |
| 12.* Area | $km^2$ | 1.50 |
| | measurement year | 1985 |
| 13.* Length | km | 2.10 |
| | measurement year | 1985 |

14.* Rough classification: 539

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: James S. Gardner

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0275
3. Glacier number (in already published inventories):

4. Glacier name: BRIDGE
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): BRIDGE RIVER

7.* Geographical coordinates
- Latitude: 50° 49' N
- Longitude: 123° 34' W

8.* Orientation
- Accumulation area: SE
- Ablation area: E

9.* Highest elevation
- m a.s.l.: 2900
- measurement year: 1975

10.* Median elevation
- m a.s.l.: 2100
- measurement year: 1975

11.* Lowest elevation
- m a.s.l.: 1400
- measurement year: 1980

12.* Area
- km²: 88.10
- measurement year: 1982

13.* Length
- km: 18.20
- measurement year: 1976

14.* Rough classification: 414

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 2 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, September 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD

2. Glacier number (former PSFG number): 0310

3. Glacier number (in already published inventories):

4. Glacier name: CALTHA LAKE

5.* Geographical location (general): COAST MOUNTAINS
Leeward axis of Coast Mountains adjacent

6.* Geographical location (more specific): LILLOOET BASIN
to Stein Basin

7.* Geographical coordinates
Latitude: 59° 09' N
Longitude: 122° 17' W

8.* Orientation
Accumulation area: NW
Ablation area: NW

9.* Highest elevation: 2290 m a.s.l.
Sources - air photos: Federal A13249/52-54
measurement year: 1983
Provincial BC5339/263-265

10.* Median elevation: 2210 m a.s.l.
measurement year: 1983

11.* Lowest elevation: 2130 m a.s.l.
(Basal ice-cored debris avalanche cone to 1870 m)
measurement year: 1983

12.* Area: .04 km²
(At climax it was 0.52 km²)
measurement year: 1983

13.* Length: 0.1 km
(excludes ice-core avalanche cone at base of headwall)
measurement year: 1983

14.* Rough classification: 797

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 1 | Changes in area, volume and thickness | 1 |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Cdn Alpine J., Vol.67, 1984. Lichen- and dendro surveys, remnant glacier

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0315
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | CATHEDRAL |
| 5.* Geographical location (general) | | ROCKY MOUNTAINS |
| 6.* Geographical location (more specific) | | KICKING HORSE R |
| 7.* Geographical coordinates | Latitude | 51° 24' N |
| | Longitude | 116° 23' W |
| 8.* Orientation | Accumulation area | NW |
| | Ablation area | NW |
| 9.* Highest elevation | m a.s.l. | 2980 |
| | measurement year | 1982 |
| 10.* Median elevation | m a.s.l. | |
| | measurement year | 19 |
| 11.* Lowest elevation | m a.s.l. | 2730 |
| | measurement year | 1982 |
| 12.* Area | $km^2$ | .9 |
| | measurement year | 19 |
| 13.* Length | km | .60 |
| | measurement year | 1982 |
| 14.* Rough classification | | 638 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks

17. Data sheet compiled by: M. Demuth

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0390
3. Glacier number (in already published inventories):

4. Glacier name: CUMBERLAND
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): NOSTETUKO RIVER

7.* Geographical coordinates — Latitude: 51° 12' N
Longitude: 124° 24' W

8.* Orientation — Accumulation area: NW
Ablation area: W

9.* Highest elevation: 2440 m a.s.l.
measurement year: 19 85

10.* Median elevation: 2130 m a.s.l.
measurement year: 19 85

11.* Lowest elevation: 1830 m a.s.l.
measurement year: 19 85

12.* Area: 2.80 km²
measurement year: 19 85

13.* Length: 2.50 km
measurement year: 19 85

14.* Rough classification: 528

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: Area and length measurements approximate

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0431
3. Glacier number (in already published inventories):

4. Glacier name: DEVON ICE CAP
5.* Geographical location (general): HIGH ARCTIC
6.* Geographical location (more specific): DEVON ISLAND

7.* Geographical coordinates
- Latitude: 75° 25' N
- Longitude: 83° 15' W

8.* Orientation
- Accumulation area: NW
- Ablation area: NW

9.* Highest elevation
- m a.s.l.: 1890
- measurement year: 1983

10.* Median elevation
- m a.s.l.: 1200
- measurement year: 1983

11.* Lowest elevation
- m a.s.l.: 0
- measurement year: 1983

12.* Area
- km²: 1695.1
- measurement year: 1983

13.* Length
- km: 50.0
- measurement year: 1983

14.* Rough classification: 303

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Prior to 1986 work sponsored by Polar Continental Shelf Project

17. Data sheet compiled by: R.M. Koerner, Terrain Sciences Division, G.S.C.

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD

2. Glacier number (former PSFG number) 0508

3. Glacier number (in already published inventories)

4. Glacier name EAST ARM

5.* Geographical location (general) ST. ELIAS MTS

6.* Geographical location (more specific) TATSHENSHINI R.

7.* Geographical coordinates
Latitude 59° 43' N
Longitude 137° 36' W

8.* Orientation
Accumulation area N, NE, E, W, S and SE ALL
Many catchments oriented to all points of the compass
Ablation area SE

9.* Highest elevation m a.s.l. 2290
May source may be 1950 or 1955 photography
measurement year 1950

10.* Median elevation m a.s.l. 1600
measurement year 1950

11.* Lowest elevation m a.s.l. 730
measurement year 1950

12.* Area $km^2$ 120.00 ± 20
approx. taken from 1:250,000 scale maps
measurement year 1950

13.* Length km 19.00 ± 1
approx. taken from 1:250,000 scale maps
measurement year 1950

14.* Rough classification 419

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks Swiss Aluminum Ltd. is active in this area and studying the glacier

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD

2. Glacier number (former PSFG number) 0575

3. Glacier number (in already published inventories)

4. Glacier name ELKIN

5.* Geographical location (general) COAST MOUNTAINS

6.* Geographical location (more specific) TATLOW RANGE

7.* Geographical coordinates
- Latitude 51° 22' N
- Longitude 123° 51' W

8.* Orientation
- Accumulation area NE
- Ablation area NE

9.* Highest elevation
- m a.s.l. 2750
- measurement year 1982

10.* Median elevation
- m a.s.l. 2260
- measurement year 1982

11.* Lowest elevation
- m a.s.l. 2040
- measurement year 1982

12.* Area
- $km^2$ 1.49
- measurement year 1951

13.* Length
- km 1.9
- measurement year 1951

14.* Rough classification 529

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks Lowest elev. of actively moving clear ice is 2200 for S lobe and 2290 for N.

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.)
2. Glacier number (former PSFG number) 0560
3. Glacier number (in already published inventories)

4. Glacier name EMERALD
5.* Geographical location (general) BRITISH COLUMBIA
6.* Geographical location (more specific) YOHO NAT. PARK

7.* Geographical coordinates
- Latitude 51° 30' N
- Longitude 116° 32' W

8.* Orientation
- Accumulation area NE
- Ablation area NE

9.* Highest elevation
- m a.s.l. 2680
- measurement year 1977

10.* Median elevation
- m a.s.l. 2400
- measurement year 1977

11.* Lowest elevation
- m a.s.l. 2240
- measurement year 1977

12.* Area
- km² 1.90
- measurement year 1977

13.* Length
- km 1.00
- measurement year 1977

14.* Rough classification 676

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 1 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: R.J. Rogerson

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0678
3. Glacier number (in already published inventories):

4. Glacier name: FLOOD
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): STIKINE RIVER

7.* Geographical coordinates
- Latitude: 57° 09' N
- Longitude: 133° 06' W

8.* Orientation
- Accumulation area: N
- Ablation area: NE

9.* Highest elevation
- m a.s.l.: 1980
- measurement year: 1980

10.* Median elevation
- m a.s.l.: 760
- measurement year: 1980

11.* Lowest elevation
- m a.s.l.: 300
- measurement year: 1980

12.* Area
- km²: 11.00
- measurement year: 1980

13.* Length
- km: 17.00
- measurement year: 1980

14.* Rough classification: 628

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: Area and length measurements approximate

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0672
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | FORREST KERR |
| 5.* Geographical location (general) | | COAST MOUNTAINS |
| 6.* Geographical location (more specific) | | ISKUT RIVER |
| 7.* Geographical coordinates | Latitude | 56° 54' N |
| | Longitude | 130° 56' W |
| 8.* Orientation | Accumulation area | E |
| | Ablation area | E |
| 9.* Highest elevation | m a.s.l. | 1980 |
| | measurement year | 1981 |
| 10.* Median elevation | m a.s.l. | 1300 |
| | measurement year | 1981 |
| 11.* Lowest elevation | m a.s.l. | 620 |
| | measurement year | 1981 |
| 12.* Area | km² | 99.20 |
| | measurement year | 1981 |
| 13.* Length | km | 19.00 |
| | measurement year | 1981 |
| 14.* Rough classification | | 428 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0692
3. Glacier number (in already published inventories):

4. Glacier name: FRIENDLY
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): CHILCOTIN BASIN

7.* Geographical coordinates
- Latitude: 51° 03' N
- Longitude: 123° 51' W

8.* Orientation
- Accumulation area: N
- Ablation area: NE

9.* Highest elevation
- m a.s.l.: 2652
- measurement year: 1951

10.* Median elevation
- m a.s.l.: 2200
- measurement year: 1951

11.* Lowest elevation
- m a.s.l.: 1880
- measurement year: 1951

12.* Area
- km²: 4.43
- measurement year: 1951

13.* Length
- km: 4.5
- measurement year: 1951

14.* Rough classification: 528

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Slight debris cover on tongue

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0698
3. Glacier number (in already published inventories):

4. Glacier name: FYLES
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): NOEICK RIVER

7.* Geographical coordinates — Latitude: 52° 06' N
Longitude: 126° 14' W

8.* Orientation — Accumulation area: NW
Ablation area: NE

9.* Highest elevation — m a.s.l.: 2680
measurement year: 1964

10.* Median elevation — m a.s.l.: ca. 1860
measurement year: 1964

11.* Lowest elevation (Base of ice in Ape Lake visible when lake drained by jökulhlaup) — m a.s.l.: 1320
measurement year: 1984

12.* Area — km²: 20.0
measurement year: 1964

13.* Length — km: 9.2
measurement year: 1964

14.* Rough classification: 224

15. Number of data sheets submitted: 222

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 2 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 2 |

16. Remarks: Glacier has common neve with Ape and Noeick glaciers. In early 1900s coalesced with Atavist Gl. at their snouts. Neve also connects to Monarch Icefield to south. GSC Open File 1139, Cdn Alpine Journal 1979, 1985, 1986

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0855
3. Glacier number (in already published inventories):

4. Glacier name: HELM
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): GARIBALDI PARK

7.* Geographical coordinates
- Latitude: 49° 58' N
- Longitude: 123° 00' W

8.* Orientation
- Accumulation area: NW
- Ablation area: NW

9.* Highest elevation
- m a.s.l.: 2150
- measurement year: 1975

10.* Median elevation
- m a.s.l.: 1900
- measurement year: 1975

11.* Lowest elevation
- m a.s.l.: 1770
- measurement year: 1980

12.* Area
- km²: 2.50
- measurement year: 1985

13.* Length
- km: 2.60
- measurement year: 1975

14.* Rough classification: 626

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | ~~Hydro~~meteorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 0875
3. Glacier number (in already published inventories):

4. Glacier name: HIDDEN
5.* Geographical location (general): LABRADOR
6.* Geographical location (more specific): TORNGAT MTS.

7.* Geographical coordinates
- Latitude: 58° 56' N
- Longitude: 63° 33' W

8.* Orientation
- Accumulation area: NW
- Ablation area: NW

9.* Highest elevation
- m a.s.l.: 1090
- measurement year: 19

10.* Median elevation
- m a.s.l.: 920
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 790
- measurement year: 19

12.* Area
- km²: .85
- measurement year: 1981

13.* Length
- km: 1.5
- measurement year: 19

14.* Rough classification: 648

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: C.S.L. Ommanney

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1260
3. Glacier number (in already published inventories):

4. Glacier name: LOWELL
5.* Geographical location (general): KLUANE RANGES
6.* Geographical location (more specific): ALSEK RIVER

7.* Geographical coordinates
- Latitude: 60° 20' N
- Longitude: 138° 15' W

8.* Orientation
- Accumulation area: NE
- Ablation area: E

9.* Highest elevation
- m a.s.l.: 4425
- measurement year: 1951

10.* Median elevation
- m a.s.l.: 1375
- measurement year: 1951

11.* Lowest elevation
- m a.s.l.: 550
- measurement year: 1974

12.* Area
- km²: 530.
- measurement year: 1951

13.* Length
- km: 60.
- measurement year: 1951

14.* Rough classification: 414

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks

17. Data sheet compiled by: G. Holdsworth

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD
2. Glacier number (former PSFG number) 1335
3. Glacier number (in already published inventories)

4. Glacier name MEIGHEN ICE CAP
5.* Geographical location (general) HIGH ARCTIC
6.* Geographical location (more specific) MEIGHEN ISLAND

7.* Geographical coordinates
- Latitude 79° 57' N
- Longitude 99° 08' W

8.* Orientation
- Accumulation area R
- Ablation area R

9.* Highest elevation
- m a.s.l. 1267
- measurement year 1960

10.* Median elevation
- m a.s.l. 600
- measurement year 1960

11.* Lowest elevation
- m a.s.l. 70
- measurement year 1960

12.* Area
- km² 85.0
- measurement year 1960

13.* Length
- km 56.0
- measurement year 1960

14.* Rough classification 303

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks Previously sponsored by Polar Continental Shelf Project

17. Data sheet compiled by: R.M. Koerner, Terrain Sciences Division, G.S.C.

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1345
3. Glacier number (in already published inventories):

4. Glacier name: MILNE
5.* Geographical location (general): ELLESMERE ISL.
6.* Geographical location (more specific): BRITISH EMPIRE RG

7.* Geographical coordinates — Latitude: 82° 24' N
Longitude: 80° 00' W

8.* Orientation — Accumulation area: NW
Ablation area: NW

9.* Highest elevation — m a.s.l.: 1920
measurement year: 19

10.* Median elevation — m a.s.l.: 760
measurement year: 19

11.* Lowest elevation — m a.s.l.: 0
measurement year: 19

12.* Area — km²: 900.
measurement year: 19

13.* Length — km: 31.
measurement year: 19

14.* Rough classification: 424

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: Approximate measurements from 1:250,000 scale topographic map

17. Data sheet compiled by: C.S.L. Ommanney

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1350
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | MINARET |
| 5.* Geographical location (general) | | LABRADOR |
| 6.* Geographical location (more specific) | | TORNGAT MTS. |
| 7.* Geographical coordinates | Latitude | 58° 53' N |
| | Longitude | 63° 41' |
| 8.* Orientation | Accumulation area | NE |
| | Ablation area | NE |
| 9.* Highest elevation | m a.s.l. | 1505 |
| | measurement year | 19 |
| 10.* Median elevation | m a.s.l. | 1250 |
| | measurement year | 19 |
| 11.* Lowest elevation | m a.s.l. | 1020 |
| | measurement year | 19 |
| 12.* Area | km² | .91 |
| | measurement year | 1981 |
| 13.* Length | km | 1.9 |
| | measurement year | 19 |
| 14.* Rough classification | | 648 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: C.S.L. Ommanney

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1408
3. Glacier number (in already published inventories):

4. Glacier name: MATAVAS
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): ISKUT RIVER

7.* Geographical coordinates — Latitude: 57° 04' N
Longitude: 130° 49' W

8.* Orientation — Accumulation area: NE
Ablation area: E

9.* Highest elevation: 1980 m a.s.l.; measurement year: 1985

10.* Median elevation: 1520 m a.s.l.; measurement year: 1985

11.* Lowest elevation: 1130 m a.s.l.; measurement year: 1985

12.* Area: 3.50 km²; measurement year: 1985

13.* Length: 4.00 km; measurement year: 1985

14.* Rough classification: 522

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: Area and length measurements approximate

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1465
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | MOEICK |
| 5.* Geographical location (general) | | COAST MOUNTAINS |
| 6.* Geographical location (more specific) | | MOEICK RIVER |
| 7.* Geographical coordinates | Latitude | 52° 06' N |
| | Longitude | 126° 17' W |
| 8.* Orientation | Accumulation area | E |
| | Ablation area | NE |
| 9.* Highest elevation | m a.s.l. | 2530 |
| | measurement year | 1964 |
| 10.* Median elevation | m a.s.l. | 1750 |
| | measurement year | 1964 |
| 11.* Lowest elevation | m a.s.l. | 1460 |
| | measurement year | 1964 |
| 12.* Area | km² | 8.9 |
| | measurement year | 1964 |
| 13.* Length | km | 5.3 |
| | measurement year | 1964 |
| 14.* Rough classification | | 228 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | 2 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Has neve common to Fyles, War Drum and an unnamed glacier. Historically the snout merged with the western terminus of the Fyles Glacier
17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD
2. Glacier number (former PSFG number) 1590
3. Glacier number (in already published inventories)

| | | |
|---|---|---|
| 4. Glacier name | | OVERLORD |
| 5.* Geographical location (general) | | COAST MOUNTAINS |
| 6.* Geographical location (more specific) | | GARIBALDI PARK |
| 7.* Geographical coordinates | Latitude | 50° 01' N |
| | Longitude | 122° 50' W |
| 8.* Orientation | Accumulation area | NW |
| | Ablation area | NW |
| 9.* Highest elevation | m a.s.l. | 2630 |
| | measurement year | 1972 |
| 10.* Median elevation | m a.s.l. | 2190 |
| | measurement year | 1977 |
| 11.* Lowest elevation | m a.s.l. | 1636 |
| | measurement year | 1972 |
| 12.* Area | km² | 2.6 |
| | measurement year | 1977 |
| 13.* Length | km | 2.9 |
| | measurement year | 1972 |
| 14.* Rough classification | | 538 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | 2 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks Typical glacier of southern Coast Mts of B.C., heavily used by tourists, skiers, etc. Located 12 km southeast of Whistler Village ski resort.
17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1640
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | PEYTO |
| 5.* Geographical location (general) | | ROCKY MOUNTAINS |
| 6.* Geographical location (more specific) | | WAPTA ICEFIELD |
| 7.* Geographical coordinates | Latitude | 51° 40' N |
| | Longitude | 116° 32' W |
| 8.* Orientation | Accumulation area | NE |
| | Ablation area | NE |
| 9.* Highest elevation | m a.s.l. | 3185 |
| | measurement year | 1966 |
| 10.* Median elevation | m a.s.l. | 2635 |
| | measurement year | 1966 |
| 11.* Lowest elevation | m a.s.l. | 2125 |
| | measurement year | 1966 |
| 12.* Area | km² | 13.35 |
| | measurement year | 1980 |
| 13.* Length | km | 5.3 |
| | measurement year | 1966 |

14.* Rough classification: 528

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: One of the original Canadian IHD representative glacier basins

17. Data sheet compiled by: C.S.L. Ommanney

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1660
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | PLACE |
| 5.* Geographical location (general) | | COAST MOUNTAINS |
| 6.* Geographical location (more specific) | | BIRKEN, B.C. |
| 7.* Geographical coordinates | Latitude | 50° 26' N |
| | Longitude | 122° 36' W |
| 8.* Orientation | Accumulation area | NE |
| | Ablation area | NW |
| 9.* Highest elevation | m a.s.l. | 2610 |
| | measurement year | 1975 |
| 10.* Median elevation | m a.s.l. | 2100 |
| | measurement year | 1980 |
| 11.* Lowest elevation | m a.s.l. | 1860 |
| | measurement year | 1985 |
| 12.* Area | km² | 3.70 |
| | measurement year | 1985 |
| 13.* Length | km | 4.30 |
| | measurement year | 1980 |

14.* Rough classification: 538

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: One of the original Canadian IHD representative glacier basins

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.)
2. Glacier number (former PSFG number) 1690
3. Glacier number (in already published inventories)

4. Glacier name PURGATORY
5.* Geographical location (general) COAST MOUNTAINS
6.* Geographical location (more specific) MOEICK RIVER

7.* Geographical coordinates
- Latitude 52° 08' N
- Longitude 126° 22' W

8.* Orientation
- Accumulation area NE
- Ablation area N

9.* Highest elevation
- m a.s.l. 2930
- measurement year 1964

10.* Median elevation (from aerial photos)
- m a.s.l. 2120
- measurement year 1978

11.* Lowest elevation (sometimes terminates in Purgatory Lake)
- m a.s.l. 545
- measurement year 1978

12.* Area
- $km^2$ 13.9
- (from 1978 air photos) measurement year 1978

13.* Length
- km 7.8
- measurement year 1978

14.* Rough classification 538

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 2 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks Glacier has long, steep (49%) and narrow ablation tongue fed by highly elevated neve = very sensitive to moisture level changes

17. Data sheet compiled by: Karl Picker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1785
3. Glacier number (in already published inventories):

4. Glacier name ** UNOFFICIAL NAME **: QUEEN MARY WEST
5.* Geographical location (general): ST. ELIAS MTS
6.* Geographical location (more specific): HUBBARD GLACIER

7.* Geographical coordinates
- Latitude: 60° 40' N
- Longitude: 139° 45' W

8.* Orientation
- Accumulation area: W
- Ablation area:

9.* Highest elevation
- m a.s.l.: 3800
- measurement year: 19

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.:
- measurement year: 19

12.* Area
- $km^2$: .
- measurement year: 19

13.* Length
- km: .
- measurement year: 19

14.* Rough classification: 030

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: Mountain glacier tributary to the Hubbard Glacier

17. Data sheet compiled by: G. Holdsworth

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1915
3. Glacier number (in already published inventories):

4. Glacier name: SENTINEL
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): GARIBALDI PARK

7.* Geographical coordinates
- Latitude: 49° 54' N
- Longitude: 122° 59' W

8.* Orientation
- Accumulation area: N
- Ablation area: NW

9.* Highest elevation
- m a.s.l.: 2105
- measurement year: 1975

10.* Median elevation
- m a.s.l.: 1850
- measurement year: 1965

11.* Lowest elevation
- m a.s.l.: 1660
- measurement year: 1985

12.* Area
- km²: 1.77
- measurement year: 1985

13.* Length
- km: 1.90
- measurement year: 1980

14.* Rough classification: 530

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: One of the original Canadian IHD representative glacier basins

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1983
3. Glacier number (in already published inventories):

4. Glacier name: SUPERGUKSOAK
5.* Geographical location (general): LABRADOR
6.* Geographical location (more specific): TORNGAT MTS

7.* Geographical coordinates
- Latitude: 58° 57' N
- Longitude: 63° 47' W

8.* Orientation
- Accumulation area: N
- Ablation area: N

9.* Highest elevation
- m a.s.l.: 1080
- measurement year: 19

10.* Median elevation
- m a.s.l.: 820
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 660
- measurement year: 19

12.* Area
- km²: 1.40
- measurement year: 1981

13.* Length
- km: 2.0
- measurement year: 19

14.* Rough classification: 649

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: C.S.L. Ommanney

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 1995
3. Glacier number (in already published inventories):

4. Glacier name: SYKORA
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): BRIDGE RIVER

7.* Geographical coordinates
- Latitude: 50° 52' N
- Longitude: 123° 35' W

8.* Orientation
- Accumulation area: E
- Ablation area: E

9.* Highest elevation
- m a.s.l.: 2750
- measurement year: 1975

10.* Median elevation
- m a.s.l.: 2050
- measurement year: 1975

11.* Lowest elevation
- m a.s.l.: 1520
- measurement year: 1980

12.* Area
- km²: 25.35
- measurement year: 1982

13.* Length
- km: 9.20
- measurement year: 1976

14.* Rough classification: 418

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | ~~Hydro~~meteorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, September 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD

2. Glacier number (former PSFG number): 2015

3. Glacier number (in already published inventories):

4. Glacier name: TCHAIKAZAN

5.* Geographical location (general): COAST MOUNTAINS

6.* Geographical location (more specific): CHILCOTIN RANGE

7.* Geographical coordinates
- Latitude: 51° 01' N
- Longitude: 123° 47' W

8.* Orientation
- Accumulation area: NW
- Ablation area: N

9.* Highest elevation
- m a.s.l.: 3018
- measurement year: 1951

10.* Median elevation
- m a.s.l.: 2410
- measurement year: 1951

11.* Lowest elevation
- m a.s.l.: 1790
- measurement year: 1951

12.* Area
- km²: 21.35
- measurement year: 1951

13.* Length
- km: 8.5
- measurement year: 1951

14.* Rough classification: 518

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | 1 | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 2040
3. Glacier number (in already published inventories):

4. Glacier name: TIEDEMANN
5.* Geographical location (general): HOMATHKO RIVER
6.* Geographical location (more specific): MT. WADDINGTON

7.* Geographical coordinates
- Latitude: 51° 20' N
- Longitude: 125° 03' W

8.* Orientation
- Accumulation area: SE
- Ablation area: SE

9.* Highest elevation
- m a.s.l.: 3800
- measurement year: 1980

10.* Median elevation
- m a.s.l.: 1950
- measurement year: 1980

11.* Lowest elevation
- m a.s.l.: 700
- measurement year: 1980

12.* Area
- km²: 62.69
- measurement year: 1980

13.* Length
- km: 24.00
- measurement year: 1980

14.* Rough classification: 529

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 3 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, September 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD
2. Glacier number (former PSFG number) 2075
3. Glacier number (in already published inventories)

4. Glacier name TSOLOSS
5.* Geographical location (general) COAST MOUNTAINS
6.* Geographical location (more specific) TATLOW RANGE

7.* Geographical coordinates
- Latitude 51° 23' N
- Longitude 123° 52' W

8.* Orientation
- Accumulation area N
- Ablation area NE

9.* Highest elevation
- m a.s.l. 3050
- measurement year 1982

10.* Median elevation
- m a.s.l. 2560
- measurement year 1982

11.* Lowest elevation
- m a.s.l. 2330
- measurement year 1951

12.* Area
- km² 1.06
- measurement year 1951

13.* Length
- km 1.6
- measurement year 1982

14.* Rough classification 504

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks see Ricker, K., 1983. Canadian Alpine Journal, Vol.66, 61-67

17. Data sheet compiled by: Karl Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 2318
3. Glacier number (in already published inventories): RISE
4. Glacier name: WARD HUNT ICE
5.* Geographical location (general): ELLESMERE IS.
6.* Geographical location (more specific): WARD HUNT IS.
7.* Geographical coordinates: Latitude 83° 07' N; Longitude 074° 10' W
8.* Orientation: Accumulation area N; Ablation area N
9.* Highest elevation: 30 m a.s.l.; measurement year 1980
10.* Median elevation: m a.s.l.; measurement year 19
11.* Lowest elevation: 2 m a.s.l.; measurement year 1980
12.* Area: 32. km²; measurement year 1980
13.* Length: 10. km; measurement year 1980
14.* Rough classification: 304
15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Geographical coordinates = centre of ablation net. Grounded below sea level
17. Data sheet compiled by: H. Serson

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD

2. Glacier number (former PSFG number): 2320

3. Glacier number (in already published inventories): SHELF

4. Glacier name: WARD HUNT ICE SHELF

5.* Geographical location (general): ELLESMERE IS.

6.* Geographical location (more specific): WARD HUNT IS.

7.* Geographical coordinates
- Latitude: 83° 05' N
- Longitude: 73° 48' W

8.* Orientation
- Accumulation area: Ice shelf aligned E-W along coast — N
- Ablation area: N

9.* Highest elevation
- m a.s.l.: 10
- measurement year: 1980

10.* Median elevation
- m a.s.l.: 5
- measurement year: 1980

11.* Lowest elevation
- m a.s.l.: 0
- measurement year: 1980

12.* Area
- km²: 602.
- measurement year: 1980

13.* Length
- km: 67.5
- measurement year: 1980

14.* Rough classification: 804

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Geographical coordinates = centre of ablation net

17. Data sheet compiled by: H. Serson

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 2333
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | WEDGEMOUNT |
| 5.* Geographical location (general) | | COAST MOUNTAINS |
| 6.* Geographical location (more specific) | | GARIBALDI PARK |
| 7.* Geographical coordinates | Latitude | 50° 09' N |
| | Longitude | 122° 47' W |
| 8.* Orientation | Accumulation area | N |
| | Ablation area | NW |
| 9.* Highest elevation | m a.s.l. | 2680 |
| | measurement year | 1985 |
| 10.* Median elevation | m a.s.l. | 2220 |
| | measurement year | 1985 |
| 11.* Lowest elevation | m a.s.l. | 1859 |
| | measurement year | 1985 |
| 12.* Area | $km^2$ | 2.60 |
| | measurement year | 1985 |
| 13.* Length | km | 2.7 |
| | measurement year | 1985 |
| 14.* Rough classification | | 518 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | 1 | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: Surface velocities also recorded: change in area-thickness-volume for next report. Refs: Canadian Alpine Journal 1984, 1985 and 1986 for up-to-date work
17. Data sheet compiled by: W.A. Tupper and K.E. Ricker

* Do not complete if the information in Volume IV (Table A) is still valid



Leave blank

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 2530
3. Glacier number (in already published inventories):

4. Glacier name: YURI
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): ISKUT RIVER

7.* Geographical coordinates — Latitude: 56° 58' N
Longitude: 130° 41' W

8.* Orientation — Accumulation area: NW
Ablation area: NW

9.* Highest elevation — m a.s.l.: 2010
measurement year: 19 78

10.* Median elevation — m a.s.l.: 1645
measurement year: 19 78

11.* Lowest elevation — m a.s.l.: 1390
measurement year: 19 80

12.* Area — km²: 3.60
measurement year: 19 78

13.* Length — km: 3.00
measurement year: 19 80

14.* Rough classification: 638

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, May 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



Leave blank

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 2605
3. Glacier number (in already published inventories):

4. Glacier name: ZAVISHA
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): BRIDGE RIVER

7.* Geographical coordinates
- Latitude: 50° 48' N
- Longitude: 123° 25' W

8.* Orientation
- Accumulation area: N
- Ablation area: N

9.* Highest elevation
- m a.s.l.: 2500
- measurement year: 1975

10.* Median elevation
- m a.s.l.: 2200
- measurement year: 1975

11.* Lowest elevation
- m a.s.l.: 2010
- measurement year: 1976

12.* Area
- km²: 6.50
- measurement year: 1975

13.* Length
- km: 3.10
- measurement year: 1975

14.* Rough classification: 636

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | 1 |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | 1 | Hydrometeorological data | 1 |
| Mass balance addenda from earlier years | | Special events | |

16. Remarks: PROJECT TERMINATED, September 1985

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid



Leave blank

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 5075
3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED
5.* Geographical location (general): COAST MOUNTAINS
6.* Geographical location (more specific): MOSTETUMO RIVER

7.* Geographical coordinates
- Latitude: 51° 14' N
- Longitude: 124° 30' W

8.* Orientation
- Accumulation area: N
- Ablation area: N

9.* Highest elevation
- m a.s.l.: 2450
- measurement year: 1985

10.* Median elevation
- m a.s.l.: 2070
- measurement year: 1985

11.* Lowest elevation
- m a.s.l.: 1890
- measurement year: 1985

12.* Area
- $km^2$: 2.50
- measurement year: 1985

13.* Length
- km: 2.00
- measurement year: 1985

14.* Rough classification: 528

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | | Mass balance versus altitude | |
| Variations addenda from earlier years | | Changes in area, volume and thickness | |
| Mass balance summary data | | Hydrometeorological data | |
| Mass balance addenda from earlier years | | Special events | 1 |

16. Remarks: Area and length measurements approximate

17. Data sheet compiled by: O. Mokievsky-Zubok

* Do not complete if the information in Volume IV (Table A) is still valid

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD

2. Glacier number (former PSFG number) 5105

3. Glacier number (in already published inventories)

4. Glacier name UNNAMED

5.* Geographical location (general) SOUTHWEST YUKON

6.* Geographical location (more specific) RUBY RANGE

7.* Geographical coordinates
Latitude 61° 28' N
Longitude 138° 07' W

8.* Orientation
Accumulation area
Ablation area

9.* Highest elevation
m a.s.l. 1670
measurement year 1983

10.* Median elevation
m a.s.l.
measurement year 19

11.* Lowest elevation
m a.s.l. 1520
measurement year 1983

12.* Area
km²
measurement year 19

13.* Length
km
measurement year 19

14.* Rough classification 902

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

Talus foot

16. Remarks Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD

2. Glacier number (former PSFG number) 5110

3. Glacier number (in already published inventories)

4. Glacier name UNNAMED

5.* Geographical location (general) SOUTHWEST YUKON

6.* Geographical location (more specific) RUBY RANGE

7.* Geographical coordinates
- Latitude 61° 27' N
- Longitude 138° 10' W

8.* Orientation
- Accumulation area N
- Ablation area N

9.* Highest elevation
- m a.s.l. 1520
- measurement year 1982

10.* Median elevation
- m a.s.l.
- measurement year 19

11.* Lowest elevation
- m a.s.l. 1370
- measurement year 1982

12.* Area
- km² .
- measurement year 19

13.* Length
- km .
- measurement year 19

14.* Rough classification 902

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



Leave blank

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 5115
3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED
5.* Geographical location (general): SOUTHWEST YUKON
6.* Geographical location (more specific): RUBY RANGE

7.* Geographical coordinates
- Latitude: 61° 32' N
- Longitude: 138° 10' W

8.* Orientation
- Accumulation area: SW
- Ablation area: SW

9.* Highest elevation
- m a.s.l.: 1670
- measurement year: 1983

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.:
- measurement year: 19

12.* Area
- km²:
- measurement year: 19

13.* Length
- km:
- measurement year: 19

14.* Rough classification: 902

15. Number of data sheets submitted: Talus foot

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 5120
3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED
5.* Geographical location (general): SOUTHWEST YUKON
6.* Geographical location (more specific): RUBY RANGE

7.* Geographical coordinates
- Latitude: 61° 32' N
- Longitude: 138° 17' N

8.* Orientation
- Accumulation area: Sequence of features along N-S oriented valley
- Ablation area:

9.* Highest elevation
- m a.s.l.: 1370
- measurement year: 19 84

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 1220
- measurement year: 19 83

12.* Area
- $km^2$: .
- measurement year: 19

13.* Length
- km: .
- measurement year: 19

14.* Rough classification: 902

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |
| | | Talus foot | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



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WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory CANADA (abbrev.) CD
2. Glacier number (former PSFG number) 5125
3. Glacier number (in already published inventories)

| | | |
|---|---|---|
| 4. Glacier name | | UNNAMED |
| 5.* Geographical location (general) | | ST. ELIAS MTS. |
| 6.* Geographical location (more specific) | | DUKE RIVER |
| 7.* Geographical coordinates | Latitude | 61° 05' N |
| | Longitude | 139° 05' W |
| 8.* Orientation | Accumulation area | SW |
| | Ablation area | SW |
| 9.* Highest elevation | m a.s.l. | 1920 |
| | measurement year | 1980 |
| 10.* Median elevation | m a.s.l. | |
| | measurement year | 19 |
| 11.* Lowest elevation | m a.s.l. | 1830 |
| | measurement year | 1980 |
| 12.* Area | $km^2$ | . |
| | measurement year | 19 |
| 13.* Length | km | . |
| | measurement year | 19 |
| 14.* Rough classification | | 902 |

15. Number of data sheets submitted

Talus foot

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 5130
3. Glacier number (in already published inventories):

| | | |
|---|---|---|
| 4. Glacier name | | UNNAMED |
| 5.* Geographical location (general) | | ST. ELIAS MTS. |
| 6.* Geographical location (more specific) | | DUKE RIVER |
| 7.* Geographical coordinates | Latitude | 61° 05' N |
| | Longitude | 139° 08' W |
| 8.* Orientation | Accumulation area | N |
| | Ablation area | NE |
| 9.* Highest elevation | m a.s.l. | 1980 |
| | measurement year | 1980 |
| 10.* Median elevation | m a.s.l. | |
| | measurement year | 19 |
| 11.* Lowest elevation | m a.s.l. | 1860 |
| | measurement year | 1980 |
| 12.* Area | km² | . |
| | measurement year | 19 |
| 13.* Length | km | . |
| | measurement year | 19 |
| 14.* Rough classification | | 939 |

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD

2. Glacier number (former PSFG number): 5135

3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED

5.* Geographical location (general): ST. ELIAS MTS.

6.* Geographical location (more specific): DUKE RIVER

7.* Geographical coordinates
- Latitude: 61° 06' N
- Longitude: 139° 08' W

8.* Orientation
- Accumulation area: SW
- Ablation area: SW

9.* Highest elevation
- m a.s.l.: 1980
- measurement year: 1980

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 1860
- measurement year: 1980

12.* Area
- km²:
- measurement year: 19

13.* Length
- km:
- measurement year: 19

14.* Rough classification: 902 Talus foot

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 5140
3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED
5.* Geographical location (general): SOUTHWEST YUKON
6.* Geographical location (more specific): DALTON RANGE

7.* Geographical coordinates
- Latitude: 60° 29' N
- Longitude: 137° 13' W

8.* Orientation
- Accumulation area: NE
- Ablation area: NE

9.* Highest elevation
- m a.s.l.: 1980
- measurement year: 1985

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 790
- measurement year: 1985

12.* Area
- km²:
- measurement year: 19

13.* Length
- km:
- measurement year: 19

14.* Rough classification: 939

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD

2. Glacier number (former PSFG number): 5145

3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED

5.* Geographical location (general): SOUTHWEST YUKON

6.* Geographical location (more specific): DALTON RANGE

7.* Geographical coordinates
- Latitude: 60° 29' N
- Longitude: 137° 13' W

8.* Orientation
- Accumulation area: NE
- Ablation area: NE

9.* Highest elevation
- m a.s.l.: 1980
- measurement year: 19 85

10.* Median elevation
- m a.s.l.:
- measurement year: 19

11.* Lowest elevation
- m a.s.l.: 915
- measurement year: 19 85

12.* Area
- $km^2$:
- measurement year: 19

13.* Length
- km:
- measurement year: 19

14.* Rough classification: 939

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



Leave blank

WORLD GLACIER MONITORING SERVICE

# GENERAL INFORMATION ON THE OBSERVED GLACIERS 1980-85

Leave blank

1. Country or territory: CANADA (abbrev.) CD
2. Glacier number (former PSFG number): 5150
3. Glacier number (in already published inventories):

4. Glacier name: UNNAMED
5.* Geographical location (general): SOUTHWEST YUKON
6.* Geographical location (more specific): DALTON RANGE

7.* Geographical coordinates — Latitude: 60° 28' N
Longitude: 137° 12' W

8.* Orientation — Accumulation area: NE
Ablation area: NE

9.* Highest elevation: 1980 m a.s.l.
measurement year: 1985

10.* Median elevation: m a.s.l.
measurement year: 19

11.* Lowest elevation: 760 m a.s.l.
measurement year: 1985

12.* Area: km²
measurement year: 19

13.* Length: km
measurement year: 19

14.* Rough classification: 939

15. Number of data sheets submitted

| | | | |
|---|---|---|---|
| Variations in the position of glacier fronts | ☐ | Mass balance versus altitude | ☐ |
| Variations addenda from earlier years | ☐ | Changes in area, volume and thickness | ☐ |
| Mass balance summary data | ☐ | Hydrometeorological data | ☐ |
| Mass balance addenda from earlier years | ☐ | Special events | ☐ |

16. Remarks: Rock glacier/talus foot movement survey, no significant results to date

17. Data sheet compiled by: P.G. Johnson

* Do not complete if the information in Volume IV (Table A) is still valid



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## 3.0: VARIATIONS IN THE POSITION OF GLACIER FRONTS

Glacier variations in Canada have been measured in a number of different ways over the years. Early investigators traditionally measured from one fixed, known point to the outer limit of the visible glacier or determined the mean variation from a number of fixed point measurements. Some of the systematic glacier studies around the turn of the century, reported in the previous Canadian report, to the Permanent Service on the Fluctuations of Glaciers, also included regular ground photography from established photo stations.

The lack of Water Survey of Canada data on glacier variations reflects the cancellation of their glacier survey program in western Canada. They were the only agency in Canada measuring glacier variations systematically on an annual or biennial basis. It was thought that the Calgary Office of the Water Survey of Canada might continue their snout surveys of the Athabasca and Saskatchewan glaciers but these too were cancelled.

Many of the variation data contained in this report have been derived from geomorphological, photographic and photogrammetric reconstructions of snout positions by Karl Ricker and his colleagues. Without his effort there would be very little to report on in this category. The abbreviations used in this section are as follows: ACC = Alpine Club of Canada, GSC = Geological Survey of Canada, UBC = University of British Columbia. The Canadian Alpine Journal references for various dates may be found in the bibliography under the names of the pincipal and co-investigators. The GSC Open File Report No.1139 is by D.P. Jones, K.E. Ricker, J.R. Desloges and M. Maxwell. Precise dates are often not readily available so blank data fields represent missing information rather than an oversight by the compiler. The metric values quoted here are usually direct conversions from source material in imperial units.

Although previous PSFG reports have included glacier variation data from various published sources there is still data from some glaciers lacking. In future reports we hope to provide information on the following glaciers in British Columbia - Warner, Salmon, Betty, Bromley and maybe the Leduc and Berendon.

Anyone wishing to draw conclusions from the data which follows should note that no information is available on glacier variations in either the Yukon or Northwest Territories. These areas contain more than 80% of the total permanent ice cover of Canada.

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number)
3. Glacier name ABRAHAM

4. Observed since year 1981
5. Date of initial survey for reported period day/mth/yr . 07 . 1981

| | | |
|---|---|---|
| 6. Variation (Previous survey to 1981 survey) | m | ± . |
| 7. Altitude of snout/lowest point * | m a.s.l. | |
| 8. Date of survey | day/mth/yr | . 07 . 81 |
| 9. Variation (Previous survey to 1982 survey) | m | ± + 1 . 7 |
| 10. Altitude of snout/lowest point * | m a.s.l. | |
| 11. Date of survey | day/mth/yr | . 08 . 82 |
| 12. Variation (Previous survey to 1983 survey) | m | ± + 1 . 0 |
| 13. Altitude of snout/lowest point * | m a.s.l. | |
| 14. Date of survey | day/mth/yr | . 08 . 83 |
| 15. Variation (Previous survey to 1984 survey) | m | ± + 0 . 8 |
| 16. Altitude of snout/lowest point * | m a.s.l. | |
| 17. Date of survey | day/mth/yr | . 08 . 84 |
| 18. Variation (Previous survey to 1985 survey) | m | ± . |
| 19. Altitude of snout/lowest point * | m a.s.l. | |
| 20. Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

21. Error in variations m ± .
    in variations m ± .
22. Method Linear measurement from four stations around snout
23. Investigator(s) R.J. Rogerson
24. Sponsoring agency Memorial University of Newfoundland, St. John's, Newfoundland
25. Remarks Data taken from Rogerson, R.J., 1986. Mass balance of four cirque glaciers in the Torngat Mountains of northern Labrador, Canada. J. of Glac. 32(111), 208-218
26. Data sheet compiled by C.S.L. Ommanney

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0148
3. Glacier name ANDREI

4. Observed since — year: 1978
5. Date of initial survey for reported period — day/mth/yr: 23.09.1980

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± − 29.5 |
| 7. | Altitude of snout/lowest point * | m a.s.l. | < 700 |
| 8. | Date of survey | day/mth/yr | 01.10.81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± − 19.5 |
| 10. | Altitude of snout/lowest point * | m a.s.l. | < 700 |
| 11. | Date of survey | day/mth/yr | 27.09.82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± − 40.0 |
| 13. | Altitude of snout/lowest point * | m a.s.l. | < 700 |
| 14. | Date of survey | day/mth/yr | 26.09.83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± ± 0. |
| 16. | Altitude of snout/lowest point * | m a.s.l. | < 700 |
| 17. | Date of survey | day/mth/yr | 11.09.84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | .. .. 85 |

* *delete inappropriate term*

21. Error in variations — m: ± 2.0
    in variations — m: ± 15.

22. Method: Direct linear measurements from markers to outer limit of snout.
23. Investigator(s): O. Mokievsky-Zubok
24. Sponsoring agency: Nat. Hydr. Research Inst. and B.C. Hydro
25. Remarks: PROJECT TERMINATED, May 1985
26. Data sheet compiled by: O. Mokievsky-Zubok

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0170
3. Glacier name APE

4. Observed since year 1947
5. Date of initial survey for reported period ca. ~~day/mth/yr~~ .. .. 1900
   Based on dendrochronology of climax moraine

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1947 survey) | m | ± − | 419. |
| 7. Altitude of snout/lowest point * | m a.s.l. | | 1395 |
| 8. Date of survey | day/mth/yr | | 30.07.1947 |
| 9. Variation (Previous survey to 1951 survey) | m | ± − | 83. |
| 10. Altitude of snout/lowest point * | m a.s.l. | ca. | 1420 |
| 11. Date of survey | day/mth/yr | | 14.09.1951 |
| 12. Variation (Previous survey to 1954 survey) | m | ± − | 45. |
| 13. Altitude of snout/lowest point * | m a.s.l. | ca. | 1430 |
| 14. Date of survey | day/mth/yr | | 29.09.1954 |
| 15. Variation (Previous survey to 1964 survey) | m | ± − | 140. |
| 16. Altitude of snout/lowest point * | m a.s.l. | ca. | 1460 |
| 17. Date of survey | day/mth/yr | | .. .. 1964 |
| 18. Variation (Previous survey to 1978 survey) | m | ± + | 33. |
| 19. Altitude of snout/lowest point * | m a.s.l. | ca. | 1455 |
| 20. Date of survey | day/mth/yr | | 24.07.1978 |

* delete inappropriate term

21. Error in variations m ± 10.
    in altitudes m ± 15.
22. Method Aerial photogrammetry (no ground control)
23. Investigator(s) K. Ricker, D. Jones, J. Desloges and M. Maxwell
24. Sponsoring agency ACC, GSC, UBC, BC Ministry of Environment
25. Remarks 1948 aerial photography also available for measurement.
    Refs: GSC Open File Report 1139, Canadian Alpine Journal 1979, 1985, 1986 ☐ from ☐
26. Data sheet compiled by Karl Ricker



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0170
3. Glacier name APE

4. Observed since year 1947
5. Date of initial survey for reported period day/mth/yr 24.07.1978
   Oblique aerial photography

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± -39. |
| 16. | Altitude of snout/lowest point * | m a.s.l. Ca. | 1460 |
| 17. | Date of survey | day/mth/yr | 29.10. 84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . 85 |

* delete inappropriate term

21. Error in variations m ± 10.
    in variations m ± 15.
22. Method Aerial photography (no ground control
23. Investigator(s) K. Ricker, D. Jones, J. Desloges, M. Maxwell
24. Sponsoring agency ACC, GSC, UBC, B.C. Ministry of Environment
25. Remarks The 1984-1986 variation is negligible but the melt season began late in 1986 (about one week before the aerial photography)
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0170
3. Glacier name APE

4. Observed since — year — 1947
5. Date of initial survey for reported period — day/mth/yr — 29.10.1984

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1986 survey) | m | ± ± | 0. |
| 7. Altitude of snout/lowest point * | m a.s.l. | | 1460 |
| 8. Date of survey | day/mth/yr | 02.08.1986 | |
| 9. Variation (Previous survey to ____ survey) | m | ± | . |
| 10. Altitude of snout/lowest point * | m a.s.l. | | |
| 11. Date of survey | day/mth/yr | . . | |
| 12. Variation (Previous survey to ____ survey) | m | ± | . |
| 13. Altitude of snout/lowest point * | m a.s.l. | | |
| 14. Date of survey | day/mth/yr | . . | |
| 15. Variation (Previous survey to ____ survey) | m | ± | . |
| 16. Altitude of snout/lowest point * | m a.s.l. | | |
| 17. Date of survey | day/mth/yr | . . | |
| 18. Variation (Previous survey to ____ survey) | m | ± | . |
| 19. Altitude of snout/lowest point * | m a.s.l. | | |
| 20. Date of survey | day/mth/yr | . . | |

* *delete inappropriate term*

21. Error in variations — m — ± 10.
    in altitudes — m — ± 15.
22. Method Aerial photography (no ground control)
23. Investigator(s) K. Ricker, D. Jones, J. Desloges, M. Maxwell
24. Sponsoring agency ACC, GSC, UBC, B.C. Ministry of Environment
25. Remarks The 1984-1986 variations is negligible but the melt season began late in 1986 (about one week before the aerial photography ☐ from ☐
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0187
3. Glacier name ATAVISTI

4. Observed since (1st year of photography) year 1947
5. Date of initial survey for reported period ca. ~~day/mth/yr~~ . . 1900

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1951 survey) | m | ± − 585. |
| 7. | Altitude of snout/lowest point * | m a.s.l. | ca. 1460 |
| 8. | Date of survey | day/mth/yr | 14. 09. 1951 |
| 9. | Variation (Previous survey to 1954 survey) | m | ± ± 0. |
| 10. | Altitude of snout/lowest point * | m a.s.l. | ca. 1460 |
| 11. | Date of survey | day/mth/yr | 29. 09. 1954 |
| 12. | Variation (Previous survey to 1964 survey) | m | ± − 168. |
| 13. | Altitude of snout/lowest point * | m a.s.l. | 1570 |
| 14. | Date of survey | day/mth/yr | . . 1964 |
| 15. | Variation (Previous survey to 1978 survey) | m | ± ± 0. |
| 16. | Altitude of snout/lowest point * | m a.s.l. | 1570 |
| 17. | Date of survey | day/mth/yr | 24. 07. 1978 |
| 18. | Variation (Previous survey to ____ survey) | m | ± . |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . |

* *delete inappropriate term*

21. Error in variations m ± 10.
    in altitudes m ± 15.
22. Method Climax moraine dated by dendrochronology; air photo measurements (=A)
23. Investigator(s) K. Ricker, D. Jones, J. Desloges and M. Maxwell
24. Sponsoring agency GSC, UBC, Karl Ricker
25. Remarks In 1900 (±) the glacier was in non-contributing coalescence with snout of Fyles Glacier, located to the south [ ] from [ ]
26. Data sheet compiled by Karl Ricker



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0187
3. Glacier name ATAVIST

4. Observed since (by photogrammetry) — year: 1947
5. Date of initial survey for reported period — day/mth/yr: 24.07.1978

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± . |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± . |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± . |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± -???.?? |
| 16. | Altitude of snout/lowest point * | m a.s.l. | |
| 17. | Date of survey | day/mth/yr | 31.10. 84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± . |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

21. Error in variations — m: ± 10.
    in variations — m: ± 15.
22. Method Overview comparison to 1978 air photo
23. Investigator(s) K. Ricker
24. Sponsoring agency B.C. Ministry of Environment
25. Remarks Visited 31 October 1984 as part of jökulhlaup investigation. Amount of retreat was not determined at that time.
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 01,87
3. Glacier name ATAVIST

| | | | |
|---|---|---|---|
| 4. Observed since | year | | 1947 |
| 5. Date of initial survey for reported period | day/mth/yr | 31. 10. | 1984 |
| 6. Variation (Previous survey to 1986 survey) | m | ± - | 39. |
| 7. Altitude of snout/lowest point * | m a.s.l. | | 1570 |
| 8. Date of survey | day/mth/yr | 02. 08. | 1986 |
| 9. Variation (Previous survey to ____ survey) | m | ± | . |
| 10. Altitude of snout/lowest point * | m a.s.l. | | |
| 11. Date of survey | day/mth/yr | . . | |
| 12. Variation (Previous survey to ____ survey) | m | ± | . |
| 13. Altitude of snout/lowest point * | m a.s.l. | | |
| 14. Date of survey | day/mth/yr | . . | |
| 15. Variation (Previous survey to ____ survey) | m | ± | . |
| 16. Altitude of snout/lowest point * | m a.s.l. | | |
| 17. Date of survey | day/mth/yr | . . | |
| 18. Variation (Previous survey to ____ survey) | m | ± | . |
| 19. Altitude of snout/lowest point * | m a.s.l. | | |
| 20. Date of survey | day/mth/yr | . . | |

* *delete inappropriate term*

| | | | |
|---|---|---|---|
| 21. Error in variations | m | ± | 10. |
| in altitudes | m | ± | 15. |

22. Method Overview comparison to 1978 air photo
23. Investigator(s) K. Ricker
24. Sponsoring agency B.C. Ministry of Environment
25. Remarks ____ from ____
26. Data sheet compiled by Karl Ricker



Leave blank

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0265
3. Glacier name BOUNDARY

4. Observed since — year — 1983
5. Date of initial survey for reported period — day/mth/yr — 29.06.1983

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± −3.0 |
| 16. | Altitude of snout/lowest point * | m a.s.l. | 2368 |
| 17. | Date of survey | day/mth/yr | 14.07.84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± −2.5 |
| 19. | Altitude of snout/lowest point * | m a.s.l. | 2368 |
| 20. | Date of survey | day/mth/yr | 30.07.85 |

* delete inappropriate term

21. Error in variations — m — ± 0.5
    in variations — m — ± 15.

22. Method Linear measurements for marked boulders at terminus
23. Investigator(s) James Gardner
24. Sponsoring agency Department of Geography, University of Waterloo
25. Remarks Investigation funded through grant from Natural Sciences and Engineering Research Council of Canada
26. Data sheet compiled by James Gardner



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 03.10
3. Glacier name CALTHA LAKE

4. Observed since year 1951
5. Date of initial survey for reported period day/mth/yr . . 1980

| | | |
|---|---|---|
| 6. Variation (Previous survey to 1981 survey) | m | ± . |
| 7. Altitude of snout/lowest point * | m a.s.l. | |
| 8. Date of survey | day/mth/yr | . . 81 |
| 9. Variation (Previous survey to 1982 survey) | m | ± . |
| 10. Altitude of snout/lowest point * | m a.s.l. | |
| 11. Date of survey | day/mth/yr | . . 82 |
| 12. Variation (Previous survey to 1983 survey) | m | ± 0.0 |
| 13. Altitude of snout/lowest point * | m a.s.l. | |
| 14. Date of survey | day/mth/yr | . . 83 |
| 15. Variation (Previous survey to 1984 survey) | m | ± . |
| 16. Altitude of snout/lowest point * | m a.s.l. | |
| 17. Date of survey | day/mth/yr | . . 84 |
| 18. Variation (Previous survey to 1985 survey) | m | ± 0.0 |
| 19. Altitude of snout/lowest point * | m a.s.l. | |
| 20. Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

21. Error in variations m ± 10.
in variations m ± 15.

22. Method From field photographs and topographic maps
23. Investigator(s) K. Ricker and A. Parke
24. Sponsoring agency K. Ricker and Alpine Club of Canada
25. Remarks It is probably safe to assume that there was not change from 1983-1985. The 1985 figure is assumed, not measured.
26. Data sheet compiled by Karl Ricker



Leave blank

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0310
3. Glacier name CALTHA LAKE

4. Observed since year 1951
5. Date of initial survey for reported period day/mth/yr . . 1983

6. Variation (Previous survey to 1986 survey) m ± 0.0
7. Altitude of snout/lowest point * m a.s.l.
8. Date of survey day/mth/yr . 09 . 1986

9. Variation (Previous survey to [ ] survey) m ±
10. Altitude of snout/lowest point * m a.s.l.
11. Date of survey day/mth/yr . . .

12. Variation (Previous survey to [ ] survey) m ±
13. Altitude of snout/lowest point * m a.s.l.
14. Date of survey day/mth/yr . . .

15. Variation (Previous survey to [ ] survey) m ±
16. Altitude of snout/lowest point * m a.s.l.
17. Date of survey day/mth/yr . . .

18. Variation (Previous survey to [ ] survey) m ±
19. Altitude of snout/lowest point * m a.s.l.
20. Date of survey day/mth/yr . . .

* *delete inappropriate term*

21. Error in variations m ± 10.
    in altitudes m ± 15.
22. Method From field photographs and topographic maps
23. Investigator(s) K. Ricker and A. Parke
24. Sponsoring agency K. Ricker and Alpine Club of Canada
25. Remarks Probably safe to assume no change from 1983-1985 so this figure could be based on 1985 survey rather than 1983 [ ] from [ ]
26. Data sheet compiled by Karl Ricker



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0575
3. Glacier name: ELKIN

4. Observed since: year 1951
5. Date of initial survey for reported period: day/mth/yr . . 1951

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± 0.0 |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . 09 . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± |
| 16. | Altitude of snout/lowest point * | m a.s.l. | |
| 17. | Date of survey | day/mth/yr | . . 84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

| | | | |
|---|---|---|---|
| 21. | Error in variations | m | ± 10. |
| | in variations | m | ± 15. |

22. Method: Comparison of photographs and field measurements
23. Investigator(s): Karl Ricker
24. Sponsoring agency: K.E. Ricker Ltd. and Alpine Club of Canada
25. Remarks: Ice-cored moraine is still attached by debris-covered ice to at least the N. lobe clean ice which is 1000 m distant. Cdn Alp. Jo., Vol.66, 61-67
26. Data sheet compiled by



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0560
3. Glacier name EMERALD

4. Observed since — year
5. Date of initial survey for reported period — day/mth/yr 00.00.1978

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1979 survey) | m | ± + | 4.6 |
| 7. Altitude of snout/lowest point * | m a.s.l. | | |
| 8. Date of survey | day/mth/yr | . . | |
| 9. Variation (Previous survey to 1980 survey) | m | ± + | 2.0 |
| 10. Altitude of snout/lowest point * | m a.s.l. | | |
| 11. Date of survey | day/mth/yr | .07. | 1980 |
| 12. Variation (Previous survey to ____ survey) | m | ± | . |
| 13. Altitude of snout/lowest point * | m a.s.l. | | . |
| 14. Date of survey | day/mth/yr | . . | |
| 15. Variation (Previous survey to ____ survey) | m | ± | . |
| 16. Altitude of snout/lowest point * | m a.s.l. | | |
| 17. Date of survey | day/mth/yr | . . | |
| 18. Variation (Previous survey to ____ survey) | m | ± | . |
| 19. Altitude of snout/lowest point * | m a.s.l. | | |
| 20. Date of survey | day/mth/yr | . . | |

* delete inappropriate term

21. Error in variations — m ± .
    in altitudes — m ± 15.
22. Method Three linear measurements to edge of moraine
23. Investigator(s) R.J. Rogerson, R. Jackson, M. Batterson, R. Kodybka, H. Trudel
24. Sponsoring agency Memorial University of Newfoundland
25. Remarks See R.J. Rogerson, 1985. Journal of Glaciology, 31(107), 13-17 ☐ from ☐
26. Data sheet compiled by C.S.L. Ommanney



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0560
3. Glacier name EMERALD

4. Observed since year 1978
5. Date of initial survey for reported period day/mth/yr . 07 . 1980

| | | |
|---|---|---|
| 6. Variation (Previous survey to 1981 survey) | m | ± + 2.5 |
| 7. Altitude of snout/lowest point * | m a.s.l. | |
| 8. Date of survey | day/mth/yr | . 09 . 81 |
| 9. Variation (Previous survey to 1982 survey) | m | ± + 1.6 |
| 10. Altitude of snout/lowest point * | m a.s.l. | |
| 11. Date of survey | day/mth/yr | . 09 . 82 |
| 12. Variation (Previous survey to 1983 survey) | m | ± . |
| 13. Altitude of snout/lowest point * | m a.s.l. | |
| 14. Date of survey | day/mth/yr | . . 83 |
| 15. Variation (Previous survey to 1984 survey) | m | ± . |
| 16. Altitude of snout/lowest point * | m a.s.l. | |
| 17. Date of survey | day/mth/yr | . . 84 |
| 18. Variation (Previous survey to 1985 survey) | m | ± . |
| 19. Altitude of snout/lowest point * | m a.s.l. | |
| 20. Date of survey | day/mth/yr | . . 85 |

* delete inappropriate term

21. Error in variations m ± .9
    in variations m ± 15.

22. Method Linear measurements at 16 sites along moraine margin
23. Investigator(s) R.J. Rogerson, H. Trudel and M. Russell
24. Sponsoring agency Memorial University of Newfoundland
25. Remarks R.J. Rogerson, 1985. Journal of Glaciology, 31(107), 13-17
26. Data sheet compiled by C.S.L. Ommanney



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0692
3. Glacier name FRIENDLY

4. Observed since year 1900
5. Date of initial survey for reported period day/mth/yr 01.08.1975

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± − 214. |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . 07. 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± |
| 16. | Altitude of snout/lowest point * | m a.s.l. | |
| 17. | Date of survey | day/mth/yr | . . 84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

21. Error in variations m ± 5.
    in variations m ± 15.
22. Method Linear measurements from cairns to outer limits of snout
23. Investigator(s) J. Lixvar and Karl Ricker
24. Sponsoring agency K.E. Ricker Ltd. and Alpine Club of Canada
25. Remarks Despite the shaded snout, the retreat of this glacier is much greater than the adjacent Tchaikazan. 1900 is inferred date of terminal moraine
26. Data sheet compiled by Karl Ricker



Leave blank

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0698
3. Glacier name FYLES

4. Observed since year 1947
   (1947 oblique air photos yet to be measured)
5. Date of initial survey for reported period ca. ~~day/mth/yr~~ . . 1900
   (Position of climax moraine)

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1954 survey) | m | ± − | 252. |
| 7. Altitude of snout/lowest point * | m a.s.l. | ca. | 1375 |
| (Submerged in lake) 8. Date of survey | day/mth/yr | | 29. 09. 1954 |
| 9. Variation (Previous survey to 1964 survey) | m | ± − | 78. |
| 10. Altitude of snout/lowest point * | m a.s.l. | ca. | 1345 |
| (Submerged base) 11. Date of survey | day/mth/yr | | . . 1964 |
| 12. Variation (Previous survey to 1978 survey) | m | ± − | 126. |
| 13. Altitude of snout/lowest point * | m a.s.l. | ca. | 1340 |
| (Submerged base) 14. Date of survey | day/mth/yr | | 24. 07. 1978 |
| 15. Variation (Previous survey to survey) | m | ± | . |
| 16. Altitude of snout/lowest point * | m a.s.l. | | |
| 17. Date of survey | day/mth/yr | | . . |
| 18. Variation (Previous survey to survey) | m | ± | . |
| 19. Altitude of snout/lowest point * | m a.s.l. | | |
| 20. Date of survey | day/mth/yr | | . . |

* delete inappropriate term

21. Error in variations m ± 10.
    in altitudes m ± 15.
22. Method Dendrochronology for climax moraine (1900); aerial photogrammetry
23. Investigator(s) K. Ricker, D. Jones, J. Desloges and M. Maxwell
24. Sponsoring agency ACC, GSC, UBC
25. Remarks Snout is lobate and could be measured in many ways. Above values are longitudinal (minimize shrinkage). On east lobe, calving into Ape Lake retreat much greater. Review in GSC Open File 1139 with data for 1947 and 1951 ☐ from ☐
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0698
3. Glacier name FYLES

4. Observed since year 1947
5. Date of initial survey for reported period day/mth/yr 24.07.1978

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± .0 |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± .0 |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± .0 |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± ± 0.0 |
| 16. | Altitude of snout/lowest point * (Base of glacier exposed by drainage of Ape Lake) | m a.s.l. ca. | 1340 |
| 17. | Date of survey | day/mth/yr | 31.10.84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± - 11.0 |
| 19. | Altitude of snout/lowest point * | m a.s.l. ca. | 1340 |
| 20. | Date of survey | day/mth/yr | 02.08.85 |

* delete inappropriate term

21. Error in variations m ± 2.0
    in variations m ± 15.0
22. Method Geodetic and aerial photographic
23. Investigator(s) K. Ricker, A. Port, D. Jones, J. Desloges and M. Maxwell
24. Sponsoring agency ACC, GSC, UBC, B.C. Ministry of Environment
25. Remarks 1984 - along lake margin retreat averaged 8 m (area of ice loss/lake front width. Above data = longitudinal "dry land" changes which will increasingly be influenced by the lake as the margin continues to retreat.
26. Data sheet compiled by Karl Ricker

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0698
3. Glacier name FYLES

4. Observed since (1st aerial photography) year 1947
5. Date of initial survey for reported period day/mth/yr 31.10.1984

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1986 survey) | m | ± − | 23. |
| 7. Altitude of snout/lowest point * | m a.s.l. | | 1335 |
| 8. Date of survey | day/mth/yr | 02.08.1986 | |
| 9. Variation (Previous survey to ____ survey) | m | ± | . |
| 10. Altitude of snout/lowest point * | m a.s.l. | | |
| 11. Date of survey | day/mth/yr | . . | |
| 12. Variation (Previous survey to ____ survey) | m | ± | . |
| 13. Altitude of snout/lowest point * | m a.s.l. | | |
| 14. Date of survey | day/mth/yr | . . | |
| 15. Variation (Previous survey to ____ survey) | m | ± | . |
| 16. Altitude of snout/lowest point * | m a.s.l. | | |
| 17. Date of survey | day/mth/yr | . . | |
| 18. Variation (Previous survey to ____ survey) | m | ± | . |
| 19. Altitude of snout/lowest point * | m a.s.l. | | |
| 20. Date of survey | day/mth/yr | . . | |

* *delete inappropriate term*

21. Error in variations m ± 2.0
    in altitudes m ± 15.
22. Method Geodetic and aerial photographic
23. Investigator(s) K. Ricker, A. Port, D. Jones, J. Desloges and M. Maxwell
24. Sponsoring agency ACC, GSC, UBC, B.C. Ministry of Environment
25. Remarks Retreat will increasingly be influenced by the lake as the margin continues to retreat. [ ] from [ ]
26. Data sheet compiled by Karl Ricker

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1465
3. Glacier name NOEICK

4. Observed since (aerial photos) year 1947
5. Date of initial survey for reported period ca. ~~day/mth/yr~~ .. .. 1900
(Dendrochronology of Fyles Glacier climax moraine)

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1954 survey) | m | ± − | 1147. |
| 7. Altitude of snout/lowest point * | m a.s.l. | | 1340 |
| 8. Date of survey | day/mth/yr | | 29. 09. 1954 |
| 9. Variation (Previous survey to 1964 survey) | m | ± − | 743. |
| 10. Altitude of snout/lowest point * | m a.s.l. | ca. | 1460 |
| 11. Date of survey | day/mth/yr | | .. .. 1964 |
| 12. Variation (Previous survey to 1978 survey) | m | ± + | 294. |
| 13. Altitude of snout/lowest point * | m a.s.l. | ca. | 1420 |
| 14. Date of survey | day/mth/yr | | 24. 07. 1978 |
| 15. Variation (Previous survey to 1986 survey) | m | ± − | 146. |
| 16. Altitude of snout/lowest point * | m a.s.l. | ca. | 1420 |
| 17. Date of survey | day/mth/yr | | 02. 08. 1986 |
| 18. Variation (Previous survey to ____ survey) | m | ± | ____. |
| 19. Altitude of snout/lowest point * | m a.s.l. | | ____ |
| 20. Date of survey | day/mth/yr | | .. .. ____ |

* delete inappropriate term

21. Error in variations m ± 10.
in altitudes m ± 15.
22. Method Aerial photogrammetry (no ground control)
23. Investigator(s) K. Ricker, J. Desloges, D. Jones and M. Maxwell
24. Sponsoring agency ACC, GSC, UBC
25. Remarks 1947, 1948, 1951 and perhaps 1985 air photos still to be measured
Dating may refine Noeick 19th century moraine: GSC Open File 1139 ☐ from ☐
Cdn Alpine Journal 1986
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM ~~EARLIER~~ YEARS LATER

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1465
3. Glacier name NOEICK

4. Observed since — year 1947
5. Date of initial survey for reported period — day/mth/yr 24.07.1978

6. Variation (Previous survey to 1986 survey) — m ± -146.
7. Altitude of snout/lowest point * — m a.s.l. 1420
8. Date of survey — day/mth/yr 02.08.1986

9. Variation (Previous survey to [ ] survey) — m ± [ ].
10. Altitude of snout/lowest point * — m a.s.l. [ ]
11. Date of survey — day/mth/yr [ ].[ ].[ ]

12. Variation (Previous survey to [ ] survey) — m ± [ ].
13. Altitude of snout/lowest point * — m a.s.l. [ ]
14. Date of survey — day/mth/yr [ ].[ ].[ ]

15. Variation (Previous survey to [ ] survey) — m ± [ ].
16. Altitude of snout/lowest point * — m a.s.l. [ ]
17. Date of survey — day/mth/yr [ ].[ ].[ ]

18. Variation (Previous survey to [ ] survey) — m ± [ ].
19. Altitude of snout/lowest point * — m a.s.l. [ ]
20. Date of survey — day/mth/yr [ ].[ ].[ ]

* delete inappropriate term

21. Error in variations — m ± 10.
    in altitudes — m ± 15.
22. Method Aerial photogrammetry (no ground control)
23. Investigator(s) K. Ricker
24. Sponsoring agency ACC, B.C. Ministry of Environment
25. Remarks Glacier has retreated behind a rock riegel since 1978
    [ ] from [ ]
26. Data sheet compiled by Karl Ricker

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1590
3. Glacier name OVERLORD

4. Observed since Garibaldi Park survey camera stations — year 1928
5. Date of initial survey for reported period ca. ~~day/mth/yr~~ . . 1900
(Based on inference by comparison to Wedgemount and Sphinx glaciers)

6. Variation (Previous survey to 1928 survey) m ± − 397.
7. Altitude of snout/lowest point * m a.s.l. ca. 1400
8. Date of survey Glass photo plates yet to be pulled from files in Victoria — day/mth/yr . 09 . 1928

9. Variation (Previous survey to 1951 survey) m ± − 715.
10. Altitude of snout/lowest point * m a.s.l. ca. 1660
11. Date of survey day/mth/yr . . 1951

12. Variation (Previous survey to 1972 survey) m ± + 99.0
13. Altitude of snout/lowest point * m a.s.l. ca. 1636
14. Date of survey day/mth/yr 30 . 07 . 1972

15. Variation (Previous survey to 1986 survey) m ± + 76.
16. Altitude of snout/lowest point * m a.s.l. ca. 1630
17. Date of survey day/mth/yr . . 

18. Variation (Previous survey to survey) m ± .
19. Altitude of snout/lowest point * m a.s.l.
20. Date of survey day/mth/yr . . 

* delete inappropriate term

21. Error in variations m ± 25.0
in altitudes m ± 15.

22. Method Geodetic resection of snout to 1928 Park map and Fed. topo map (1951 photos) control points and indicated snout positions on maps and photogrammetry
23. Investigator(s) ~~Karl Ricker and W.A. Turner~~
24. Sponsoring agency ACC, British Columbia Institute of Technology
25. Remarks A yet older moraine lies 210-215 m downstream. This is likely 1850 another moraine, weakly developed, is between 1900 climax and 1920 ☐ from ☐ position. This may be the early 1920s stillstand.
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1590
3. Glacier name OVERLORD

4. Observed since year 1928
5. Date of initial survey for reported period day/mth/yr summer 30.07.1972
   (exact photo date still to be verified)

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1986 survey) | m | ± + 76.0 |
| 7. | Altitude of snout/lowest point * | m a.s.l. | 1630 |
| 8. | Date of survey | day/mth/yr | 15.08.1986 |
| 9. | Variation (Previous survey to ____ survey) | m | ± |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | .. .. |
| 12. | Variation (Previous survey to ____ survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | .. .. |
| 15. | Variation (Previous survey to ____ survey) | m | ± |
| 16. | Altitude of snout/lowest point * | m a.s.l. | |
| 17. | Date of survey | day/mth/yr | .. .. |
| 18. | Variation (Previous survey to ____ survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | .. .. |

* *delete inappropriate term*

21. Error in variations m ± 5.0
    in altitudes m ± 15.0
22. Method Geodetic and photogrammetric
23. Investigator(s) K. Ricker and W.A. Tupper
24. Sponsoring agency ACC and British Columbia Institute of Technology
25. Remarks Overlord Glacier is typical of a Garibaldi Glacier with good altitude range on a NW aspect. Within easy reach and view of Whistler Ski Resort. Cdn Alpine Journal 1987 ☐ from ☐
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1690
3. Glacier name PURGATORY

4. Observed since year 1947
5. Date of initial survey for reported period ca. ~~day/mth/yr~~ . . 1900
   Aerial photography

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1947 survey) | m | ± − | 1552. |
| 7. Altitude of snout/lowest point * | m a.s.l. | ca. | 560 |
| 8. Date of survey | day/mth/yr | | 30. 07. 1947 |
| 9. Variation (Previous survey to 1954 survey) | m | ± ± | 0. |
| 10. Altitude of snout/lowest point * | m a.s.l. | ca. | 560 |
| 11. Date of survey | day/mth/yr | | 29. 09. 1954 |
| 12. Variation (Previous survey to 1964 survey) | m | ± − | 1331. |
| 13. Altitude of snout/lowest point * | m a.s.l. | ca. | 1235 |
| 14. Date of survey | day/mth/yr | | . . 1964 |
| 15. Variation (Previous survey to 1978 survey) | m | ± + | 1818. |
| 16. Altitude of snout/lowest point * | m a.s.l. | ca. | 545 |
| 17. Date of survey | day/mth/yr | | 24. 07. 1978 |
| 18. Variation (Previous survey to ____ survey) | m | ± | . |
| 19. Altitude of snout/lowest point * | m a.s.l. | | |
| 20. Date of survey | day/mth/yr | | . . |

* delete inappropriate term

21. Error in variations m ± 10.
    For 1964 error could be several 100 m too negative
    in altitudes m ± 15.
22. Method Aerial photogrammetry (no ground control)
23. Investigator(s) K. Ricker, D. Jones, M. Maxwell and J. Desloges
24. Sponsoring agency ACC, GSC, UBC
25. Remarks 1964 snout from 1:50,000 topo map appears to be too high
    Refs: GSC Open File 1139, Cdn. Alpine Journal 1985, 1986, 1987 ☐ from ☐
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1690
3. Glacier name PURGATORY

4. Observed since — year 1947
5. Date of initial survey for reported period — day/mth/yr 24.07.1978
   Aerial photography

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± − 308. |
| 16. | Altitude of snout/lowest point * | m a.s.l. ca. | 545 |
| 17. | Date of survey | day/mth/yr | 12.10. 84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . 85 |

* delete inappropriate term

21. Error in variations — m ± 5.
    in variations — m ± 15.
22. Method Aerial photography
23. Investigator(s) K. Ricker and D. Jones
24. Sponsoring agency ACC, GSC, UBC, B.C. Ministry of Environment
25. Remarks 1986 survey shows an advance of 67 m.
26. Data sheet compiled by Karl Ricker

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1690
3. Glacier name PURGATORY

4. Observed since (aerial photography) year 1947
5. Date of initial survey for reported period day/mth/yr 12.10.1984

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1986 survey) | m | ± + 67.0 |
| 7. | Altitude of snout/lowest point * (Presence of lake at snout improves control) | m a.s.l. | 545 |
| 8. | Date of survey | day/mth/yr | 02.08.1986 |
| 9. | Variation (Previous survey to [ ] survey) | m | ± [ ].[ ] |
| 10. | Altitude of snout/lowest point * | m a.s.l. | [ ] |
| 11. | Date of survey | day/mth/yr | [ ].[ ].[ ] |
| 12. | Variation (Previous survey to [ ] survey) | m | ± [ ].[ ] |
| 13. | Altitude of snout/lowest point * | m a.s.l. | [ ] |
| 14. | Date of survey | day/mth/yr | [ ].[ ].[ ] |
| 15. | Variation (Previous survey to [ ] survey) | m | ± [ ].[ ] |
| 16. | Altitude of snout/lowest point * | m a.s.l. | [ ] |
| 17. | Date of survey | day/mth/yr | [ ].[ ].[ ] |
| 18. | Variation (Previous survey to [ ] survey) | m | ± [ ].[ ] |
| 19. | Altitude of snout/lowest point * | m a.s.l. | [ ] |
| 20. | Date of survey | day/mth/yr | [ ].[ ].[ ] |

* *delete inappropriate term*

21. Error in variations m ± 5.0
    in altitudes m ± 15.0
22. Method Aerial photography
23. Investigator(s) K. Ricker and D. Jones
24. Sponsoring agency ACC, B.C. Ministry of Environment, GSC, UBC
25. Remarks The advance of 1984 to 1986 was totally unexpected - basal slip in the ablation zone may explain this anomaly (?) [ ] from [ ]
26. Data sheet compiled by Karl Ricker



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1915
3. Glacier name SENTINEL

4. Observed since year 1865
5. Date of initial survey for reported period day/mth/yr 21.09.1979

| | | | |
|---|---|---|---|
| 6. Variation (Previous survey to 1981 survey) | m | ± − | 29.5 |
| 7. Altitude of snout/lowest point * | m a.s.l. | | 1650 |
| 8. Date of survey | day/mth/yr | | 09.09.81 |
| 9. Variation (Previous survey to 1982 survey) | m | ± − | 4.5 |
| 10. Altitude of snout/lowest point * | m a.s.l. | ca. | 1652 |
| 11. Date of survey | day/mth/yr | | 03.10.82 |
| 12. Variation (Previous survey to 1983 survey) | m | ± − | 1.0 |
| 13. Altitude of snout/lowest point * | m a.s.l. | ca. | 1653 |
| 14. Date of survey | day/mth/yr | | 04.10.83 |
| 15. Variation (Previous survey to 1984 survey) | m | ± | . |
| 16. Altitude of snout/lowest point * | m a.s.l. | | |
| 17. Date of survey | day/mth/yr | | . .84 |
| 18. Variation (Previous survey to 1985 survey) | m | ± − | 13.5 |
| 19. Altitude of snout/lowest point * | m a.s.l. | | 1660 |
| 20. Date of survey | day/mth/yr | | 02.10.85 |

* delete inappropriate term

21. Error in variations m ± 1.0
    in variations m ± 5.0
22. Method Direct linear measurements from markers to outer limits of snout
23. Investigator(s) O. Mokievsky-Zubok
24. Sponsoring agency National Hydrology Research Institute, Environment Canada
25. Remarks
26. Data sheet compiled by O. Mokievsky-Zubok



Leave blank

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 2015
3. Glacier name TCHAIKAZAN

4. Observed since (direct observations) year 1951
   (1946/47 by aerial photographs)
5. Date of initial survey for reported period day/mth/yr . . 1977
   summer

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1981 survey) | m | ± |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | . . 81 |
| 9. | Variation (Previous survey to 1982 survey) | m | ± − 24.7 |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . 07 . 82 |
| 12. | Variation (Previous survey to 1983 survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . 83 |
| 15. | Variation (Previous survey to 1984 survey) | m | ± |
| 16. | Altitude of snout/lowest point * | m a.s.l. | |
| 17. | Date of survey | day/mth/yr | . . 84 |
| 18. | Variation (Previous survey to 1985 survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

21. Error in variations m ± 2.0
    in variations m ± 15.

22. Method Geodetic
23. Investigator(s) K. Ricker, J. Lixvar, N. Carter and R. Hutchison
24. Sponsoring agency ACC with help from British Columbia Mountaineering Club
25. Remarks Lixvar, J., 1983. Glacier retreat in the Tchaikazan Valley. Canadian Alpine Journal, Vol.66, 67.
26. Data sheet compiled by Karl Ricker



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WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS

A [ ] Leave blank

ADDENDA FROM ~~EARLIER~~ LATER YEARS

1. Country or territory CANADA
2. Glacier number (former PSFG number) 2015
3. Glacier name TCHAI KAZAN

4. Observed since (direct observations) year 1951
   (1946/47 by aerial photographs)
5. Date of initial survey for reported period day/mth/yr late

| | | | |
|---|---|---|---|
| 6. | Variation (Previous survey to 1986 survey) | m | ± − 100.6 |
| 7. | Altitude of snout/lowest point * | m a.s.l. | |
| 8. | Date of survey | day/mth/yr | 24.07.1986 |
| 9. | Variation (Previous survey to ____ survey) | m | ± |
| 10. | Altitude of snout/lowest point * | m a.s.l. | |
| 11. | Date of survey | day/mth/yr | . . |
| 12. | Variation (Previous survey to ____ survey) | m | ± |
| 13. | Altitude of snout/lowest point * | m a.s.l. | |
| 14. | Date of survey | day/mth/yr | . . |
| 15. | Variation (Previous survey to ____ survey) | m | ± |
| 16. | Altitude of snout/lowest point * | m a.s.l. | |
| 17. | Date of survey | day/mth/yr | . . |
| 18. | Variation (Previous survey to ____ survey) | m | ± |
| 19. | Altitude of snout/lowest point * | m a.s.l. | |
| 20. | Date of survey | day/mth/yr | . . |

* delete inappropriate term

21. Error in variations m ± 2.0
    in altitudes m ± 15.

22. Method Geodetic
23. Investigator(s) K. Ricker, J. Lixvar, N. Carter and R. Hutchison
24. Sponsoring agency ACC with help from the British Columbia Mountaineering Club
25. Remarks 1986 survey left monitor cairn at glacier edge. [ ] from [ ]
26. Data sheet compiled by Karl Ricker



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 2075
3. Glacier name TSOLOSS

4. Observed since year 1951
5. Date of initial survey for reported period day/mth/yr . . 1951

| | | |
|---|---|---|
| 6. Variation (Previous survey to 1981 survey) | m | ± . |
| 7. Altitude of snout/lowest point * | m a.s.l. | |
| 8. Date of survey | day/mth/yr | . . 81 |
| 9. Variation (Previous survey to 1982 survey) | m | ± 0.0 |
| 10. Altitude of snout/lowest point * | m a.s.l. | |
| 11. Date of survey | day/mth/yr | . 09 . 82 |
| 12. Variation (Previous survey to 1983 survey) | m | ± . |
| 13. Altitude of snout/lowest point * | m a.s.l. | |
| 14. Date of survey | day/mth/yr | . . 83 |
| 15. Variation (Previous survey to 1984 survey) | m | ± . |
| 16. Altitude of snout/lowest point * | m a.s.l. | |
| 17. Date of survey | day/mth/yr | . . 84 |
| 18. Variation (Previous survey to 1985 survey) | m | ± . |
| 19. Altitude of snout/lowest point * | m a.s.l. | |
| 20. Date of survey | day/mth/yr | . . 85 |

* *delete inappropriate term*

21. Error in variations m ± 25.
    in variations m ± 15.
22. Method Comparison of photos, single axial measurement, obs. of lake margin
23. Investigator(s) K. Ricker
24. Sponsoring agency K.E. Ricker Ltd. and Alpine Club of Canada
25. Remarks Measurements pertain to west lobe. However, east lobe also shows no change for the 1951 position.
26. Data sheet compiled by Karl Ricker



Leave blank

WORLD GLACIER MONITORING SERVICE

# VARIATIONS IN THE POSITION OF GLACIER FRONTS 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 2333
3. Glacier name WEDGE MOUNT

4. Observed since — year: 1928
5. Date of initial survey for reported period — day/mth/yr: 27.09.1980

| | | |
|---|---|---|
| 6. Variation (Previous survey to 1981 survey) | m | ± + 0.7 |
| 7. Altitude of snout/lowest point * | m a.s.l. | 1859 |
| 8. Date of survey | day/mth/yr | 04.10.81 |
| 9. Variation (Previous survey to 1982 survey) | m | ± − 5.0 |
| 10. Altitude of snout/lowest point * | m a.s.l. | 1859 |
| 11. Date of survey | day/mth/yr | 18.09.82 |
| 12. Variation (Previous survey to 1983 survey) | m | ± − 4.0 |
| 13. Altitude of snout/lowest point * | m a.s.l. | 1859 |
| 14. Date of survey | day/mth/yr | 24.09.83 |
| 15. Variation (Previous survey to 1984 survey) | m | ± ± 0. |
| 16. Altitude of snout/lowest point * | m a.s.l. | 1859 |
| 17. Date of survey | day/mth/yr | 23.09.84 |
| 18. Variation (Previous survey to 1985 survey) | m | ± − 5.7 |
| 19. Altitude of snout/lowest point * | m a.s.l. | 1859 |
| 20. Date of survey | day/mth/yr | 22.09.85 |

* *delete inappropriate term*

| | | | |
|---|---|---|---|
| 21. Error | in variations | m | ± 1.0 |
| | in variations | m | ± 0.3 |

22. Method Terrestrial photogrammetry (Jena 1318 camera) tied to survey control (3rd ord
23. Investigator(s) W.A. Tupper and K.E. Ricker
24. Sponsoring agency ACC, British Columbia Institute of Technology
25. Remarks Values are average of three points along snout which terminates in a lake.
26. Data sheet compiled by W.A. Tupper and K.E. Ricker



Leave blank

## 4.0: MASS BALANCE STUDY RESULTS

There have been some radical changes in the Canadian mass balance program since the last report to the Permanent Service on the Fluctuations of Glaciers. All the new studies that were referred to in the previous report have now been terminated. They include those undertaken in connection with hydroelectric developments in the Coast Mountains, in the Bridge River, Iskut River and the Homathko River areas by the National Hydrology Research Institute in conjunction with B.C. Hydro as well as those on four glaciers in the Torngat Mountains, Labrador by Dr R.J. Rogerson of Memorial University.

In essence the mainland program is now reduced to three of the original six IHD representative glacier basins - Sentinel, Place and Peyto, two in the Coast Mountains and one in the Rockies. Data from three small glaciers in southern Canada will hardly be sufficient to provide reasoned and significant answers to questions about the fluctuations in this portion of the continental water resource from the point of view of agricultural and industrial usage, response to changing climatic conditions and export demands. However. what is even more worrisome is that, despite the fact that Canada has as much water stored in glaciers as in the Great Lakes, there is no firm commitment to continued long-term monitoring of even this small sample. With no agency anywhere in Canada accepting responsibility for the monitoring of changes in the solid phase of the hydrological cycle it has fallen to the National Hydrology Research Institute to carry out the investigations in mainland Canada because of the data needs of its research programmes. These programmes and needs are changing so unless other individuals and agencies indicate a priority for this type of work we may shortly reach a point where there are no longer any mainland Canadian glacier data for the Canadian or international scientific community to work with.

During the past year, the Glacier Physics Section of the Polar Continental Shelf Project was transferred into the Terrain Sciences Division of the Geological Survey of Canada. Reports are included on mass balance data from Meighen Ice Cap and Devon Ice Cap but not from the South Ice Cap of Melville Island or the Agassiz Ice Cap on Ellesmere Island. As a particular stratigraphic year's data is not collected until the following year, there is some delay in the preparation of annual balances. The 1984-85 mass balance for Meighen Ice Cap remains to be calculated.

Mass balance results for the Axel Heiberg Island glaciers are now being collected by Dr W.P. Adams. Some previous data is held by the Geographisches Institut, ETH, Zürich, and may be obtained from Dr Atsumu Ohmura. Unfortunately, the data could not be obtained for inclusion in this report.

Measurements of mass balance on the Barnes Ice Cap have now been terminated following completion of work there being undertaken by Dr Roger LeB. Hooke of the University of Minnesota.

WORLD GLACIER MONITORING SERVICE

**MASS BALANCE STUDY RESULTS**
**SUMMARY DATA 1980-85**

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 0110
3. Glacier name ABRAHAM

4. Start of continuous mass balance measurements 19 81
5. Time system (enter code) 2
6. Number of measurement points 1 / 4

| | | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|---|
| 7. | Begin. of balance/measurement*yr | day.mth | | | | | |
| 8. | End of winter season | day.mth | | | | | |
| 9. | End of balance/measurement*yr | day.mth | | | | | |
| 10. | Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. | Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. | Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. | Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. | Net / annual balance specific | mm w.e. | ± | ± - 273 | ± - 456 | ± - 1284 | ± |
| 15. | Accumulation area | $km^2$ | | .25 | .27 | .19 | |
| 16. | Ablation area | $km^2$ | | .48 | .46 | .54 | |
| 17. | Total area | $km^2$ | | .73 | .73 | .73 | |
| 18. | AAR | % | | 34.5 | 37.0 | 26.1 | |
| 19. | Equilibrium line / annual equilibrium line | m a.s.l. | | 960 | 960 | 1030 | |

20. Investigator(s) R.J. Rogerson with M. Olson, E. Guy, H. Russell, T. Keliher
D. Branson, L. St.Croix, L. Davis and C. Garrity
21. Sponsoring Agency Memorial University of Newfoundland
St. John's, Newfoundland

22. Remarks Information extracted from Rogerson, R.J., 1986. Mass balance of four cirque glaciers in the Torngat Mountains of northern Labrador, Canada. Journal of Glaciology, 32(111), 208-218

☐ from ☐

23. Data sheet compiled by C.S.L. Ommanney

* delete inappropriate term

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0133
3. Glacier name: ALEXANDER

4. Start of continuous mass balance measurements: 19 78
5. Time system (enter code): 1
6. Number of measurement points: 03 / 03

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement°yr | day.mth | 23.09 | 01.10 | 26.09 | 26.09 | 11.09 |
| 8. End of winter season | day.mth | 06.05 | 06.05 | 12.05 | 28.04 | 09.05 |
| 9. End of balance/measurement°yr | day.mth | 01.10 | 26.09 | 26.09 | 11.09 | 09.05 |
| 10. Winter balance specific | mm w.e. | + 2020 | + 1490 | + 1280 | + 1690 | + 2070 |
| 11. Summer balance specific | mm w.e. | - 2200 | - 2670 | - 2680 | - 1590 | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± - 0180 | ± - 1180 | ± - 1400 | ± + 0100 | ± |
| 15. Accumulation area | km² | 3.49 | 0.00 | 0.00 | 3.43 | . |
| 16. Ablation area | km² | 1.34 | 5.83 | 5.83 | 1.40 | . |
| 17. Total area | km² | 5.83 | 5.83 | 5.83 | 5.83 | . |
| 18. AAR | % | 59.9 | 0.0 | 0.0 | 58.8 | . |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 1602 | > 1900 | > 1900 | 1530 | |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

from

23. Data sheet compiled by: O. Mokievsky-Zubok

* delete inappropriate term

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0.1.A.8
3. Glacier name: ANDREI

4. Start of continuous mass balance measurements: 1977
5. Time system (enter code): 1
6. Number of measurement points: 08 / 09

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement°yr | day.mth | 23.09 | 01.10 | 27.09 | 26.09 | 11.09 |
| 8. End of winter season | day.mth | 05.05 | 06.05 | 12.05 | 30.04 | 08.05 |
| 9. End of balance/measurement°yr | day.mth | 01.10 | 27.09 | 26.09 | 11.09 | 08.05 |
| 10. Winter balance specific | mm w.e. | + 2400 | + 1640 | + 1410 | + 1600 | + 2170 |
| 11. Summer balance specific | mm w.e. | - 2330 | - 2610 | - 2200 | - 1460 | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± + 70 | ± - 970 | ± - 790 | ± + 140 | ± |
| 15. Accumulation area | km² | 58.77 | 32.78 | 39.92 | 58.17 | . |
| 16. Ablation area | km² | 33.37 | 59.36 | 52.22 | 33.97 | . |
| 17. Total area | km² | 92.14 | 92.14 | 92.14 | 92.14 | . |
| 18. AAR | % | 63.8 | 35.6 | 43.3 | 63.1 | . |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 1385 | 1615 | 1605 | 1400 | |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

from

23. Data sheet compiled by: C. Mokievsky-Zubok

* delete inappropriate term

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA

A [ ] Leave blank

ADDENDA FROM EARLIER YEARS

1. Country or territory: CANADA
2. Glacier number (former PSFG number):
3. Glacier name: BARNES ICE CAP

4. Start of continuous mass balance measurements: 19[ ]
5. Time system (enter code): [ ]
6. Number of measurement points: [ ] / [ ]

| | | 19[ ]/[ ] | 19[ ]/[ ] | 19[ ]/[ ] | 19[ ]/[ ] | 19[ ]/[ ] |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement°yr | day.mth | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 8. End of winter season | day.mth | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 9. End of balance/measurement°yr | day.mth | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 10. Winter balance specific | mm w.e. | + [ ] | + [ ] | + [ ] | + [ ] | + [ ] |
| 11. Summer balance specific | mm w.e. | - [ ] | - [ ] | - [ ] | - [ ] | - [ ] |
| 12. Net accumulation specific | mm w.e. | + [ ] | + [ ] | + [ ] | + [ ] | + [ ] |
| 13. Net ablation specific | mm w.e. | - [ ] | - [ ] | - [ ] | - [ ] | - [ ] |
| 14. Net / annual balance specific | mm w.e. | ± - 146 | ± - 95 | ± + 105 | ± - 31 | ± - 108 |
| 15. Accumulation area | km² | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 16. Ablation area | km² | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 17. Total area | km² | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 18. AAR | % | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] | [ ].[ ] |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 1300 | 1230 | 840 | 1150 | 1200 |

20. Investigator(s): R. LeB Hooke.
21. Sponsoring agency:
22. Remarks:
23. Data sheet compiled by:

[ ] from [ ]

- 4.5 -

WORLD GLACIER MONITORING SERVICE

**MASS BALANCE STUDY RESULTS**
**SUMMARY DATA 1980-85**

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0234
3. Glacier name: BENCH

4. Start of continuous mass balance measurements: 1980
5. Time system (enter code): 1
6. Number of measurement points: 08 / 04

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 01.10 | 08.10 | 30.09 | 29.09 | 18.09 |
| 8. End of winter season | day.mth | 25.05 | 11.05 | 19.05 | 06.05 | 12.05 |
| 9. End of balance/measurement*yr | day.mth | 08.10 | 30.09 | 29.09 | 18.09 | 15.09 |
| 10. Winter balance specific | mm w.e. | + 1920 | + 1730 | + 1940 | + 1760 | + 1490 |
| 11. Summer balance specific | mm w.e. | - 2530 | - 2660 | - 2480 | - 1950 | - 2370 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± - 0610 | ± - 0930 | ± - 0540 | ± - 0190 | ± - 0880 |
| 15. Accumulation area | km² | 5.11 | 2.29 | 5.25 | 6.06 | . |
| 16. Ablation area | km² | 5.40 | 8.22 | 5.26 | 4.45 | . |
| 17. Total area | km² | 10.51 | 10.51 | 10.51 | 10.51 | 10.51 |
| 18. AAR | % | 48.6 | 21.8 | 49.9 | 57.7 | . |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 1835 | 1910 | 1845 | 1850 | 1990 |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

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23. Data sheet compiled by: O. Mokievsky-Zubok

* delete inappropriate term

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0275
3. Glacier name: BRIDGE

4. Start of continuous mass balance measurements: 1975
5. Time system (enter code): 1
6. Number of measurement points: 06-10 / 06-12

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 01.10 | 25.09 | 29.09 | 01.10 | 15.09 |
| 8. End of winter season | day.mth | 09.05 | 17.05 | 24.05 | 12.05 | 17.05 |
| 9. End of balance/measurement*yr | day.mth | 25.09 | 29.09 | 01.10 | 15.09 | 21.09 |
| 10. Winter balance specific | mm w.e. | + 2020 | + 1920 | + 1990 | + 1760 | + 1630 |
| 11. Summer balance specific | mm w.e. | - 2420 | - 2430 | - 1790 | - 1530 | - 3500 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± - 0400 | ± - 0510 | ± + 0200 | ± - 0230 | ± - 1890 |
| 15. Accumulation area | km² | . | . | 57.29 | 61.74 | . |
| 16. Ablation area | km² | . | . | 30.81 | 26.36 | . |
| 17. Total area | km² | 88.10 | 88.10 | 88.10 | 88.10 | 88.10 |
| 18. AAR | % | . | . | 65.0 | 70.1 | . |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 2190 | 2255 | 2040 | 1995 | 2555 |

20. Investigator(s): O. Mok-evsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5
22. Remarks: PROJECT TERMINATED
23. Data sheet compiled by: O. Mokievsky-Zubok

* Delete inappropriate term

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WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA

Leave blank

1. Country or territory: CANADA
2. Glacier number (former WGMS number): 0431
3. Glacier name: DEVON ICE CAP

4. Start of continuous mass balance measurements: 1961
5. Time system (enter code): 1
6. Number of measurement points: 43 / 57

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement°yr | day.mth | | | | | |
| 8. End of winter season | day.mth | | | | | |
| 9. End of balance/measurement°yr | day.mth | | | | | |
| 10. Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± − 146 | ± − 95 | ± + 105 | ± − 31 | ± − 108 |
| 15. Accumulation area | km² | | | | | |
| 16. Ablation area | km² | | | | | |
| 17. Total area | km² | | | | | |
| 18. AAR | % | | | | | |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 1300 | 1230 | 840 | 1150 | 1200 |

20. Investigator(s): R.M. Koerner
21. Sponsoring agency: Terrain Sciences Division, Geological Survey of Canada
previously Polar Continental Shelf Project
22. Remarks: Because a particular stratigraphic year's balance is not gathered until the following year, there is usually some delay in obtaining results.

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23. Data sheet compiled by: R.M. Koerner

* delete inappropriate item

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# MASS BALANCE STUDY RESULTS
## SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0855
3. Glacier name: HELM

4. Start of continuous mass balance measurements: 19 75
5. Time system (enter code): 1
6. Number of measurement points: 2 / 6

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | . | 28.09 | 01.10 | 04.10 | 24.09 |
| 8. End of winter season | day.mth | . | 26.05 | 28.05 | 15.05 | 22.05 |
| 9. End of balance/measurement*yr | day.mth | . | 01.10 | 04.10 | 24.09 | 28.09 |
| 10. Winter balance specific | mm w.e. | + | + 2410 | + 2130 | + 1790 | + 1690 |
| 11. Summer balance specific | mm w.e. | - | - 2750 | - 2340 | - 2110 | - 3420 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± | ± - 0340 | ± - 0210 | ± - 0320 | ± - 1730 |
| 15. Accumulation area | km² | . | . | 0.94 | 0.46 | 0.00 |
| 16. Ablation area | km² | . | . | 1.49 | 1.97 | 2.24 |
| 17. Total area | km² | . | 2.83 | 2.43 | 2.43 | 2.24 |
| 18. AAR | % | . | . | 38.7 | 18.9 | 0.0 |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | | 2130 | 1945 | 2005 | > 2200 |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5
22. Remarks: Data missing for 1980/81
23. Data sheet compiled by: O. Mokievsky-Zubok

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WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 0875
3. Glacier name: HIDDEN

4. Start of continuous mass balance measurements: 19 81
5. Time system (enter code): 2
6. Number of measurement points: 1 / 2

| | | 19 / | 19 81 / 82 | 19 82 / 83 | 19 83 / 84 | 19 / |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement* yr | day.mth | . | . | . | . | . |
| 8. End of winter season | day.mth | . | . | . | . | . |
| 9. End of balance/measurement* yr | day.mth | . | . | . | . | . |
| 10. Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± | ± - 238 | ± - 213 | ± - 816 | ± |
| 15. Accumulation area | km² | . | . 35 | . 40 | . 21 | . |
| 16. Ablation area | km² | . | . 50 | . 45 | . 64 | . |
| 17. Total area | km² | . | . 85 | . 85 | . 85 | . |
| 18. AAR | % | . | 41. 0 | 47. 1 | 24. 6 | . |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | | 1010 | 990 | 1100 | |

20. Investigator(s): R.J. Rogerson with M. Olson, E. Guy, H. Russell, T. Keliher D. Branson, L. St.Croix, L. Davis and C. Garrity
21. Sponsoring agency: Memorial University of Newfoundland St. John's, Newfoundland
22. Remarks: Information extracted from Rogerson, R.J., 1986. Mass balance of four cirque glaciers in the Torngat Mountains of northern Labrador, Canada. Journal of Glaciology, 32(111), 208-218
23. Data sheet compiled by: C.S.L. Ommanney

* delete inappropriate term

Leave blank

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 1335
3. Glacier name: MEIGHEN ICE CAP

4. Start of continuous mass balance measurements: 1960
5. Time system (enter code): 1
6. Number of measurement points: 25 / 35

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 19 / |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | | | | | |
| 8. End of winter season | day.mth | | | | | |
| 9. End of balance/measurement*yr | day.mth | | | | | |
| 10. Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± − 219 | ± + 117 | ± − 242 | ± + 135 | ± |
| 15. Accumulation area | km² | | | | | |
| 16. Ablation area | km² | | | | | |
| 17. Total area | km² | | | | | |
| 18. AAR | % | | | | | |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | | | | | |

20. Investigator(s): R.M. Koerner
21. Sponsoring agency: Terrain Sciences Division, Geological Survey of Canada
previously Polar Continental Shelf Project
22. Remarks: Because a particular stratigraphic year's balance is not gathered until the following year, there is usually some delay in obtaining results.

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23. Data sheet compiled by: R.M. Koerner

* delete inappropriate term

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS
## SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 1350
3. Glacier name: MINARET

4. Start of continuous mass balance measurements: 1981
5. Time system (enter code): 2
6. Number of measurement points: 1 / 9

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | | | | | |
| 8. End of winter season | day.mth | | | | | |
| 9. End of balance/measurement*yr | day.mth | | | | | |
| 10. Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± | ± + 60 | ± + 285 | ± - 156 | ± |
| 15. Accumulation area | km² | | .43 | .53 | .37 | |
| 16. Ablation area | km² | | .48 | .38 | .54 | |
| 17. Total area | km² | | .91 | .91 | .91 | |
| 18. AAR | % | | 47.0 | 58.2 | 40.7 | |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | | 1290 | 1260 | 1320 | |

20. Investigator(s): R.J. Rogerson with M. Olson, E. Guy, H. Russell, T. Kelliher D. Branson, L. St.Croix, L. Davis and C. Garrity
21. Sponsoring Agency: Memorial University of Newfoundland, St. John's, Newfoundland
22. Remarks: Information extracted from Rogerson, R.J., 1986. Mass balance of four cirque glaciers in the Torngat Mountains of northern Labrador, Canada. Journal of Glaciology, 32(111), 208-218
23. Data sheet compiled by: C.S.L. Ommanney

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* delete inappropriate term

Leave blank

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS SUMMARY DATA

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 1640
3. Glacier name: PEYTO

4. Start of continuous mass balance measurements: 1965
5. Time system (enter code):
6. Number of measurement points: 26 / 

| | | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|---|
| 7. | Begin. of balance/measurement* yr | day.mth | 23.09 | 26.09 | 11.09 | 10.09 | 12.09 |
| 8. | End of winter season | day.mth | 17.05 | 20.05 | 13.05 | 20.05 | 29.05 |
| 9. | End of balance/measurement* yr | day.mth | 26.09 | 11.09 | 10.09 | 12.09 | 12.10 |
| 10. | Winter balance specific | mm w.e. | + 1033 | + 1240 | + 870 | + 1210 | + 1130 |
| 11. | Summer balance specific | mm w.e. | - 2163 | - 1805 | - 1259 | - 1790 | - 1940 |
| 12. | Net accumulation specific | mm w.e. | + 750 | + 935 | + 828 | + 900 | + 540 |
| 13. | Net ablation specific | mm w.e. | - 1788 | - 1490 | - 1433 | - 1417 | - 1346 |
| 14. | Net / annual balance specific | mm w.e. | ± - 1130 | ± - 565 | ± - 389 | ± - 580 | ± - 810 |
| 15. | Accumulation area | km² | 3.48 | 5.09 | 6.16 | 4.82 | 3.78 |
| 16. | Ablation area | km² | 9.87 | 8.26 | 7.19 | 8.53 | 9.57 |
| 17. | Total area | km² | 13.35 | 13.35 | 13.35 | 13.35 | 13.35 |
| 18. | AAR | % | 26.1 | 38.1 | 46.1 | 36.1 | 28.3 |
| 19. | Equilibrium line / annual equilibrium line | m a.s.l. | 2764 | 2703 | 2656 | 2711 | 2755 |

20. Investigator(s): J. Power, C. David, G. Holdsworth, M. Demuth
21. Sponsoring agency: National Hydrology Research Institute
    11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5
22. Remarks: Data subject to revision pending analysis of effect of changes in areal extent of the snout.
23. Data sheet compiled by: M. Demuth

* delete inappropriate term

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WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS
## SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 1.66.0
3. Glacier name: PLACE

4. Start of continuous mass balance measurements: 19 65
5. Time system (enter code): 1
6. Number of measurement points: 12 / 26

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 20.09 | 22.09 | 02.10 | 02.10 | 23.09 |
| 8. End of winter season | day.mth | 12.05 | 21.05 | 02.05 | 22.05 | 30.04 |
| 9. End of balance/measurement*yr | day.mth | 22.09 | 02.10 | 02.10 | 23.09 | 26.09 |
| 10. Winter balance specific | mm w.e. | + 1550 | + 2010 | + 1740 | + 1720 | + 1220 |
| 11. Summer balance specific | mm w.e. | - 2640 | - 2760 | - 2180 | - 2060 | - 3110 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± - 1090 | ± - 0750 | ± - 0440 | ± - 0340 | ± - 1890 |
| 15. Accumulation area | km² | 0.48 | 1.31 | 1.38 | 1.29 | 0.10 |
| 16. Ablation area | km² | 3.28 | 2.45 | 2.33 | 2.41 | 3.60 |
| 17. Total area | km² | 3.76 | 3.76 | 3.71 | 3.70 | 3.70 |
| 18. AAR | % | 12.8 | 34.8 | 37.2 | 34.8 | 2.7 |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 2310 | 2305 | 2285 | 2140 | 2550 |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5
22. Remarks: One of the original Canadian IHD representative glacier basins

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23. Data sheet compiled by: O. Mokievsky-Zubok

* delete inappropriate term

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# MASS BALANCE STUDY RESULTS SUMMARY DATA 1980-85

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1915
3. Glacier name SENTINEL

4. Start of continuous mass balance measurements 1966
5. Time system (enter code) 1
6. Number of measurement points 11 / 10

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 29.09 | 26.09 | 04.10 | 04.10 | 25.09 |
| 8. End of winter season | day.mth | 15.05 | 27.05 | 29.05 | 17.05 | 22.05 |
| 9. End of balance/measurement*yr | day.mth | 26.09 | 04.10 | 04.10 | 25.09 | 27.09 |
| 10. Winter balance specific | mm w.e. | + 2850 | + 4040 | + 3550 | + 3290 | + 2360 |
| 11. Summer balance specific | mm w.e. | - 2680 | - 3180 | - 2750 | - 2440 | - 3200 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± + 0170 | ± + 0860 | ± + 1200 | ± + 0850 | ± - 0840 |
| 15. Accumulation area | km² | 1.11 | 1.23 | 1.53 | 1.46 | 0.38 |
| 16. Ablation area | km² | 0.66 | 0.54 | 0.24 | 0.31 | 1.34 |
| 17. Total area | km² | 1.77 | 1.77 | 1.77 | 1.77 | 1.72 |
| 18. AAR | % | 62.8 | 69.5 | 86.4 | 82.5 | 22.1 |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 1865 | 1775 | 1690 | 1780 | 2000 |

20. Investigator(s) O. Mokievsky-Zubok
21. Sponsoring Agency National Hydrology Research Institute, Environment Canada
11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5
22. Remarks One of the original Canadian IHD representative glacier basins

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23. Data sheet compiled by O. Mokievsky-Zubok

* delete inappropriate term

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# MASS BALANCE STUDY RESULTS SUMMARY DATA

Leave blank

1. Country or territory CANADA
2. Glacier number (former PSFG number) 1.2.8.3
3. Glacier name SUPERGUKSOAK

4. Start of continuous mass balance measurements 19 81
5. Time system (enter code) 2
6. Number of measurement points 9 / 12

| | | | 19 / | 19 81 / 82 | 19 82 / 83 | 19 83 / 84 | 19 / |
|---|---|---|---|---|---|---|---|
| 7. | Begin. of balance/measurement*yr | day.mth | . | . | . | . | . |
| 8. | End of winter season | day.mth | . | . | . | . | . |
| 9. | End of balance/measurement*yr | day.mth | . | . | . | . | . |
| 10. | Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. | Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. | Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. | Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. | Net / annual balance specific | mm w.e. | ± | ± - 56 | ± + 211 | ± - 606 | ± |
| 15. | Accumulation area | km² | . | . 65 | . 85 | . 28 | . |
| 16. | Ablation area | km² | . | . 75 | . 55 | 1 . 12 | . |
| 17. | Total area | km² | . | 1 . 40 | 1 . 40 | 1 . 40 | . |
| 18. | AAR | % | . | 46 . 1 | 61 . 1 | 20 . 0 | . |
| 19. | Equilibrium line / annual equilibrium line | m a.s.l. | | 910 | 860 | 970 | |

20. Investigator(s) R.J. Rogerson with M. Olson, E. Guy, H. Russell, T. Keliher D. Branson, L. St.Croix, L. Davis and C. Garrity
21. Sponsoring agency Memorial University of Newfoundland St. John's, Newfoundland
22. Remarks Information extracted from Rogerson, R.J., 1986. Mass balance of four cirque glaciers in the Torngat Mountains of northern Labrador, Canada. Journal of Glaciology, 32(111), 208-218
23. Data sheet compiled by C.S.L. Ommanney

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WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS
# SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 1995
3. Glacier name: SYKORA

4. Start of continuous mass balance measurements: 19 75
5. Time system (enter code): 1
6. Number of measurement points: 05 / 04

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 01.10 | 24.09 | 30.09 | 01.10 | 16.09 |
| 8. End of winter season | day.mth | 08.05 | 16.05 | 23.05 | 11.05 | 16.05 |
| 9. End of balance/measurement*yr | day.mth | 24.09 | 30.09 | 01.10 | 16.09 | 22.09 |
| 10. Winter balance specific | mm w.e. | + 2170 | + 2090 | + 2200 | + 1930 | + 1530 |
| 11. Summer balance specific | mm w.e. | - 2040 | - 2210 | - 1560 | - 1180 | - 2900 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± + 0130 | ± - 0120 | ± + 0650 | ± + 0750 | ± - 1370 |
| 15. Accumulation area | km² | . | . | 20.19 | 21.31 | . |
| 16. Ablation area | km² | . | . | 5.16 | 4.04 | . |
| 17. Total area | km² | 25.35 | 25.35 | 25.35 | 25.35 | 25.35 |
| 18. AAR | % | . | . | 79.6 | 84.1 | . |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 2190 | 2255 | 2035 | 1995 | 2515 |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

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23. Data sheet compiled by: O. Mokievsky-Zubok

* delete inappropriate term

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# MASS BALANCE STUDY RESULTS
# SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 2040
3. Glacier name: T.I.E.MANN

4. Start of continuous mass balance measurements: 1980
5. Time system (enter code): 1
6. Number of measurement points: 14 / 04

| | | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|---|
| 7. | Begin. of balance/measurement*yr | day.mth | 01.10 | 07.10 | 29.09 | 29.09 | 19.09 |
| 8. | End of winter season | day.mth | 24.05 | 12.05 | 15.05 | 05.05 | 12.05 |
| 9. | End of balance/measurement*yr | day.mth | 07.10 | 29.09 | 29.09 | 19.09 | 15.09 |
| 10. | Winter balance specific | mm w.e. | + 1870 | + 2090 | + 2040 | + 1870 | + 1860 |
| 11. | Summer balance specific | mm w.e. | - 3030 | - 3420 | - 2630 | - 3030 | - 3230 |
| 12. | Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. | Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. | Net / annual balance specific | mm w.e. | ± - 1160 | ± - 1330 | ± - 0590 | ± - 1160 | ± - 1370 |
| 15. | Accumulation area | km² | 33.00 | 18.53 | 31.09 | 38.54 | |
| 16. | Ablation area | km² | 29.69 | 44.16 | 31.60 | 24.15 | |
| 17. | Total area | km² | 62.69 | 62.69 | 62.69 | 62.69 | 62.69 |
| 18. | AAR | % | 52.6 | 29.6 | 49.6 | 61.5 | |
| 19. | Equilibrium line / annual equilibrium line | m a.s.l. | 1045 | 2155 | 1080 | 1685 | 2080 |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

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23. Data sheet compiled by: O. Mokievsky-Zubok

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Leave blank

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# MASS BALANCE STUDY RESULTS SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 2318
3. Glacier name: WARD HUNT ICE RISE

4. Start of continuous mass balance measurements: 1959
5. Time system (enter code): 2
6. Number of measurement points: 30 / 21

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 23.04 | | 14.05 | 19.05 | 29.04 |
| 8. End of winter season | day.mth | | | | | |
| 9. End of balance/measurement*yr | day.mth | | 14.05 | 19.05 | 29.04 | 02.05 |
| 10. Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± − 0101 | ± − 0101 | ± − 10 | ± + 2 | ± − 20 |
| 15. Accumulation area | km² | 1. | 1. | 1. | 1. | 1. |
| 16. Ablation area | km² | 1. | 1. | 1. | 1. | 1. |
| 17. Total area | km² | 1. | 1. | 1. | 1. | 1. |
| 18. AAR | % | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | | | | | |

20. Investigator(s): M. Jeffries and H. Serson
21. Sponsoring Agency: University of Calgary and University of Alaska
22. Remarks: Not scaled in 1981
23. Data sheet compiled by: H. Serson

* delete inappropriate term

Leave blank

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS
## SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 2320
3. Glacier name: WARD HUNT ICE SHELF

4. Start of continuous mass balance measurements: 19 66
5. Time system (enter code): 2
6. Number of measurement points: 66 / 32

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement*yr | day.mth | 23.04 | .. | 14.05 | 19.05 | 29.04 |
| 8. End of winter season | day.mth | .. | .. | .. | .. | .. |
| 9. End of balance/measurement*yr | day.mth | .. | 14.05 | 19.05 | 29.04 | 02.05 |
| 10. Winter balance specific | mm w.e. | + | + | + | + | + |
| 11. Summer balance specific | mm w.e. | - | - | - | - | - |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± − 158 | ± − 158 | ± − 81 | ± − 16 | ± − 21 |
| 15. Accumulation area | km² | 1.. | 1.. | 1.. | 1.. | 1.. |
| 16. Ablation area | km² | 1.. | 1.. | 1.. | 1.. | 1.. |
| 17. Total area | km² | 1.. | 1.. | 1.. | 1.. | 1.. |
| 18. AAR | % | 99.9 | 99.9 | 99.9 | 99.9 | 99.9 |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | | | | | |

20. Investigator(s): M. Jeffries and H. Serson
21. Sponsoring Agency: University of Calgary and University of Alaska
22. Remarks: Not scaled in 1981
23. Data sheet compiled by: H. Serson

from

* delete inappropriate term

WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS
# SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 2530
3. Glacier name: YUKI

4. Start of continuous mass balance measurements: 1978
5. Time system (enter code): 1
6. Number of measurement points: 04 / 03

| | | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|---|
| 7. | Begin. of balance/measurement*yr | day.mth | 23.09 | 01.10 | 26.09 | 26.09 | 11.09 |
| 8. | End of winter season | day.mth | 04.05 | 04.05 | 11.05 | 27.04 | 08.05 |
| 9. | End of balance/measurement*yr | day.mth | 01.10 | 26.09 | 26.09 | 11.09 | 08.05 |
| 10. | Winter balance specific | mm w.e. | + 1480 | + 1330 | + 1130 | + 1210 | + 1580 |
| 11. | Summer balance specific | mm w.e. | - 1620 | - 2290 | - 2240 | - 1070 | - |
| 12. | Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. | Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. | Net / annual balance specific | mm w.e. | ± - 0140 | ± - 0960 | ± - 1110 | ± + 0140 | ± |
| 15. | Accumulation area | km² | 1.54 | 0.36 | 0.56 | 2.19 | . |
| 16. | Ablation area | km² | 2.04 | 3.22 | 3.02 | 1.39 | . |
| 17. | Total area | km² | 3.58 | 3.58 | 3.58 | 3.58 | . |
| 18. | AAR | % | 43.0 | 10.1 | 15.6 | 61.2 | . |
| 19. | Equilibrium line / annual equilibrium line | m a.s.l. | 1745 | 1930 | 1960 | 1665 | |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Instute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

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23. Data sheet compiled by: O. Mokievsky-Zubok

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WORLD GLACIER MONITORING SERVICE

# MASS BALANCE STUDY RESULTS
## SUMMARY DATA 1980-85

Leave blank

1. Country or territory: CANADA
2. Glacier number (former PSFG number): 2605
3. Glacier name: ZAVISHA

4. Start of continuous mass balance measurements: 1975
5. Time system (enter code): 1
6. Number of measurement points: 03 / 03

| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
|---|---|---|---|---|---|---|
| 7. Begin. of balance/measurement°yr | day.mth | 01.10 | 24.09 | 30.09 | 01.10 | 16.09 |
| 8. End of winter season | day.mth | 08.05 | 15.05 | 22.05 | 10.05 | 16.05 |
| 9. End of balance/measurement°yr | day.mth | 24.09 | 30.09 | 01.10 | 16.09 | 21.09 |
| 10. Winter balance specific | mm w.e. | + 2160 | + 1970 | + 1920 | + 1550 | + 1420 |
| 11. Summer balance specific | mm w.e. | - 2360 | - 2490 | - 1550 | - 1240 | - 2640 |
| 12. Net accumulation specific | mm w.e. | + | + | + | + | + |
| 13. Net ablation specific | mm w.e. | - | - | - | - | - |
| 14. Net / annual balance specific | mm w.e. | ± - 0200 | ± - 0520 | ± + 0370 | ± + 0310 | ± - 1220 |
| 15. Accumulation area | km² | 1.97 | 1.12 | 5.38 | 4.89 | 0.00 |
| 16. Ablation area | km² | 4.52 | 5.37 | 1.11 | 1.60 | 6.49 |
| 17. Total area | km² | 6.49 | 6.49 | 6.49 | 6.49 | 6.49 |
| 18. AAR | % | 30.3 | 17.3 | 82.9 | 75.3 | 0.0 |
| 19. Equilibrium line / annual equilibrium line | m a.s.l. | 2315 | 2360 | 2170 | 2195 | > 2500 |

20. Investigator(s): O. Mokievsky-Zubok
21. Sponsoring Agency: National Hydrology Research Institute, Environment Canada
B.C. Hydro
22. Remarks: PROJECT TERMINATED

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23. Data sheet compiled by: O. Mokievsky-Zubok

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## 5.0: MASS BALANCE VERSUS ALTITUDE DATA

Information on mass balance by elevation band is provided for most of the glaciers for which summary tables have been prepared. In the case of the Labrador glaciers (Abraham, Hidden, Minaret and Superguksoak) summer and winter balances were not available in the article from which the data were extracted.

Tabulations of earlier data for most of the Canadian glaciers on which mass balance has been measured are contained in the report by Mokievsky-Zubok et al. (1985) which can be obtained from the National Hydrology Research Institute. Some of these data were also included in previous reports to the Permanent Service on the Fluctuations of Glaciers.

**ABRAHAM GLACIER (58056'N, 63032'W)**

**NET MASS BALANCE DATA BY ELEVATION BAND**

| Altitude<br>m a.s.l. | Area<br>$km^2$ | Balance<br>1981/82<br>m $H_2O$ | Balance<br>1982/83<br>m $H_2O$ | Balance<br>1983/84<br>m $H_2O$ |
|---|---|---|---|---|
| >1100 | 0.270 | + 1.250 | + 1.750 | + 0.750 |
| 1000-1100 | 0.154 | + 1.010 | + 1.068 | + 0.230 |
| 900-1000 | 0.244 | - 0.176 | - 0.162 | - 0.943 |
| 800- 900 | 0.194 | - 1.015 | - 1.358 | - 2.363 |
| 700- 800 | 0.108 | - 1.352 | - 2.209 | - 2.773 |
| <800 | 0.001 | - 1.750 | - 2.250 | - 2.750 |
| Total | 0.728 | + 0.273 | - 0.456 | - 1.284 |
| Equilib. Line m a.s.l. | | 960 | 960 | 1030 |

ALEXANDER GLACIER (57°06'N, 130°49'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 1800-1900 | 0.435 | 2.25 | 1.75 | + 0.50 | 23/09/80 | 06/05/81 | 01/10/81 | 1602 |
| | 1700-1800 | 1.528 | 2.25 | 1.75 | + 0.50 | | | | |
| | 1600-1700 | 1.571 | 2.16 | 1.85 | + 0.30 | | | | |
| | 1500-1600 | 0.858 | 1.91 | 2.21 | - 0.30 | | | | |
| | 1400-1500 | 0.860 | 1.75 | 3.01 | - 1.26 | | | | |
| | 1300-1400 | 0.388 | 1.57 | 3.48 | - 1.92 | | | | |
| | 1200-1300 | 0.182 | 1.25 | 3.48 | - 2.15 | | | | |
| | 1100-1200 | 0.012 | 1.25 | 3.75 | - 2.50 | | | | |
| | Total | 5.834 | 2.02 | 2.20 | - 0.18 | | | | |
| 1981-1982 | 1800-1900 | 0.435 | 1.75 | 2.25 | - 0.50 | 01/10/81 | 06/05/82 | 26/09/82 | > 1900 |
| | 1700-1800 | 1.528 | 1.60 | 2.25 | - 0.65 | | | | |
| | 1600-1700 | 1.571 | 1.69 | 2.53 | - 0.84 | | | | |
| | 1500-1600 | 0.858 | 1.39 | 3.25 | - 1.86 | | | | |
| | 1400-1500 | 0.860 | 1.25 | 2.95 | - 1.70 | | | | |
| | 1300-1400 | 0.388 | 1.03 | 2.94 | - 1.91 | | | | |
| | 1200-1300 | 0.182 | 0.75 | 3.64 | - 2.88 | | | | |
| | 1100-1200 | 0.012 | 0.75 | 3.75 | - 3.00 | | | | |
| | Total | 5.834 | 1.49 | 2.67 | - 1.18 | | | | |
| 1982-1983 | 1800-1900 | 0.435 | 1.75 | 1.93 | - 0.18 | 26/09/82 | 12/05/83 | 26/09/83 | > 1900 |
| | 1700-1800 | 1.528 | 1.46 | 2.23 | - 0.77 | | | | |
| | 1600-1700 | 1.571 | 1.27 | 2.59 | - 1.32 | | | | |
| | 1500-1600 | 0.858 | 1.25 | 3.02 | - 1.77 | | | | |
| | 1400-1500 | 0.860 | 1.11 | 3.24 | - 2.13 | | | | |
| | 1300-1400 | 0.388 | 0.90 | 3.19 | - 2.29 | | | | |
| | 1200-1300 | 0.182 | 0.75 | 3.75 | - 3.00 | | | | |
| | 1100-1200 | 0.012 | 0.75 | 3.75 | - 3.00 | | | | |
| | Total | 5.834 | 1.28 | 2.68 | - 1.40 | | | | |
| 1983-1984 | 1800-1900 | 0.435 | 1.75 | 0.75 | + 1.00 | 26/09/83 | 28/04/84 | 11/09/84 | 1530 |
| | 1700-1800 | 1.528 | 1.75 | 1.25 | + 0.50 | | | | |
| | 1600-1700 | 1.571 | 1.75 | 1.35 | + 0.40 | | | | |
| | 1500-1600 | 0.858 | 1.75 | 1.61 | + 0.14 | | | | |
| | 1400-1500 | 0.860 | 1.53 | 2.25 | - 0.72 | | | | |
| | 1300-1400 | 0.388 | 1.54 | 2.55 | - 1.01 | | | | |
| | 1200-1300 | 0.182 | 1.25 | 3.25 | - 2.00 | | | | |
| | 1100-1200 | 0.012 | 1.25 | 3.25 | - 2.00 | | | | |
| | Total | 5.834 | 1.69 | 1.59 | + 0.10 | | | | |
| 1984-1985 | 1800-1900 | 0.435 | | | | 11/09/84 | 09/05/85 | | |
| | 1700-1800 | 1.528 | | | | | | | |
| | 1600-1700 | 1.571 | | | | | | | |
| | 1500-1600 | 0.858 | PROJECT TERMINATED - - - | | | | | | |
| | 1400-1500 | 0.860 | | | | | | | |
| | 1300-1400 | 0.388 | | | | | | | |
| | 1200-1300 | 0.182 | | | | | | | |
| | 1100-1200 | 0.012 | | | | | | | |
| | Total | 5.834 | | | | | | | |

ANDREI GLACIER (56°56'40"N, 130°58'55"W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 2100-2200 | 0.115 | 3.25 | 1.25 | + 2.00 | 23/09/80 | 05/05/81 | 01/10/81 | 1385 |
| | 2000-2100 | 2.118 | 3.25 | 1.25 | + 2.00 | | | | |
| | 1900-2000 | 3.800 | 2.75 | 1.36 | + 1.39 | | | | |
| | 1800-1900 | 8.912 | 2.75 | 1.75 | + 1.00 | | | | |
| | 1700-1800 | 11.109 | 2.75 | 1.75 | + 1.00 | | | | |
| | 1600-1700 | 8.355 | 2.75 | 1.78 | + 0.97 | | | | |
| | 1500-1600 | 16.254 | 2.68 | 1.77 | + 0.91 | | | | |
| | 1400-1500 | 8.695 | 2.42 | 1.79 | + 0.63 | | | | |
| | 1300-1400 | 14.718 | 2.23 | 2.46 | - 0.23 | | | | |
| | 1200-1300 | 5.688 | 2.02 | 3.58 | - 1.56 | | | | |
| | 1100-1200 | 3.824 | 1.68 | 3.99 | - 2.31 | | | | |
| | 1000-1100 | 3.282 | 1.38 | 4.48 | - 3.11 | | | | |
| | 900-1000 | 2.460 | 1.25 | 4.54 | - 3.29 | | | | |
| | 800- 900 | 1.541 | 0.98 | 4.97 | - 3.98 | | | | |
| | 700- 800 | 0.888 | 0.75 | 5.25 | - 4.50 | | | | |
| | < 700 | 0.388 | 0.75 | 5.25 | - 4.50 | | | | |
| | Total | 92.147 | 2.40 | 2.33 | + 0.07 | | | | |
| 1981-1982 | 2100-2200 | 0.115 | 2.25 | 1.75 | + 0.50 | 01/10/81 | 06/05/82 | 27/09/82 | 1615 |
| | 2000-2100 | 2.118 | 2.25 | 1.97 | + 0.28 | | | | |
| | 1900-2000 | 3.800 | 2.25 | 2.05 | + 0.20 | | | | |
| | 1800-1900 | 8.912 | 2.25 | 1.88 | + 0.36 | | | | |
| | 1700-1800 | 11.109 | 2.15 | 1.83 | + 0.32 | | | | |
| | 1600-1700 | 8.355 | 1.99 | 1.86 | + 0.13 | | | | |
| | 1500-1600 | 16.254 | 1.70 | 2.01 | - 0.31 | | | | |
| | 1400-1500 | 8.695 | 1.39 | 2.47 | - 1.07 | | | | |
| | 1300-1400 | 14.718 | 1.35 | 3.10 | - 1.75 | | | | |
| | 1200-1300 | 5.688 | 1.24 | 3.87 | - 2.62 | | | | |
| | 1100-1200 | 3.824 | 1.01 | 4.43 | - 3.22 | | | | |
| | 1000-1100 | 3.282 | 0.79 | 4.44 | - 3.65 | | | | |
| | 900-1000 | 2.460 | 0.75 | 4.15 | - 3.40 | | | | |
| | 800- 900 | 1.541 | 0.75 | 4.35 | - 3.60 | | | | |
| | 700- 800 | 0.888 | 0.54 | 5.04 | - 4.49 | | | | |
| | < 700 | 0.388 | 0.25 | 5.25 | - 5.00 | | | | |
| | Total | 92.147 | 1.64 | 2.61 | - 0.97 | | | | |
| 1982-1983 | 2100-2200 | 0.115 | 2.25 | 1.75 | + 0.50 | 27/09/82 | 12/05/83 | 26/09/83 | 1605 |
| | 2000-2100 | 2.118 | 2.25 | 0.73 | + 1.52 | | | | |
| | 1900-2000 | 3.800 | 2.15 | 0.72 | + 1.43 | | | | |
| | 1800-1900 | 8.912 | 1.82 | 0.73 | + 1.10 | | | | |
| | 1700-1800 | 11.109 | 2.01 | 0.97 | + 1.04 | | | | |
| | 1600-1700 | 8.355 | 1.78 | 1.40 | + 0.38 | | | | |
| | 1500-1600 | 16.254 | 1.60 | 2.02 | - 0.42 | | | | |
| | 1400-1500 | 8.695 | 1.39 | 2.54 | - 1.14 | | | | |
| | 1300-1400 | 14.718 | 0.80 | 3.01 | - 2.20 | | | | |
| | 1200-1300 | 5.688 | 1.04 | 3.54 | - 2.50 | | | | |
| | 1100-1200 | 3.824 | 0.75 | 3.36 | - 2.61 | | | | |
| | 1000-1100 | 3.282 | 0.65 | 3.97 | - 3.32 | | | | |
| | 900-1000 | 2.460 | 0.47 | 4.17 | - 3.70 | | | | |
| | 800- 900 | 1.541 | 0.27 | 4.64 | - 4.37 | | | | |
| | 700- 800 | 0.888 | 0.25 | 5.20 | - 4.95 | | | | |
| | < 700 | 0.388 | 0.25 | 5.25 | - 5.00 | | | | |
| | Total | 92.147 | 1.41 | 2.20 | - 0.79 | | | | |

ANDREI GLACIER (56°56'40"N, 130°58'55"W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area km² | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| | 2100-2200 | 0.115 | 2.25 | 0.75 | + 1.50 | | | | |
| | 2000-2100 | 2.118 | 2.25 | 0.75 | + 1.50 | | | | |
| | 1900-2000 | 3.800 | 1.75 | 0.75 | + 1.00 | | | | |
| | 1800-1900 | 8.912 | 1.75 | 0.75 | + 1.00 | | | | |
| | 1700-1800 | 11.109 | 1.75 | 0.75 | + 1.00 | | | | |
| | 1600-1700 | 8.355 | 1.75 | 0.75 | + 1.00 | | | | |
| | 1500-1600 | 16.254 | 1.73 | 0.89 | + 0.84 | | | | |
| 1983-1984 | 1400-1500 | 8.695 | 1.56 | 1.25 | + 0.30 | 26/09/83 | 30/04/84 | 11/09/84 | 1400 |
| | 1300-1400 | 14.718 | 1.61 | 1.90 | - 0.29 | | | | |
| | 1200-1300 | 5.688 | 1.43 | 2.84 | - 1.41 | | | | |
| | 1100-1200 | 3.824 | 1.24 | 3.18 | - 1.93 | | | | |
| | 1000-1100 | 3.282 | 1.02 | 3.10 | - 2.09 | | | | |
| | 900-1000 | 2.460 | 1.03 | 3.19 | - 2.15 | | | | |
| | 800- 900 | 1.541 | 0.80 | 3.25 | - 2.45 | | | | |
| | 700- 800 | 0.888 | 0.44 | 3.50 | - 3.07 | | | | |
| | < 700 | 0.388 | 0.25 | 3.75 | - 3.50 | | | | |
| | Total | 92.147 | 1.60 | 1.46 | + 0.14 | | | | |
| | 2100-2200 | 0.115 | | | | | | | |
| | 2000-2100 | 2.118 | | | | | | | |
| | 1900-2000 | 3.800 | | | | | | | |
| | 1800-1900 | 8.912 | | | | | | | |
| | 1700-1800 | 11.109 | | | | | | | |
| | 1600-1700 | 8.355 | | | | | | | |
| | 1500-1600 | 16.254 | | | | | | | |
| 1984-1985 | 1400-1500 | 8.695 | PROJECT TERMINATED - - - | | | 11/09/84 | 08/05/85 | | |
| | 1300-1400 | 14.718 | | | | | | | |
| | 1200-1300 | 5.688 | | | | | | | |
| | 1100-1200 | 3.824 | | | | | | | |
| | 1000-1100 | 3.282 | | | | | | | |
| | 900-1000 | 2.460 | | | | | | | |
| | 800- 900 | 1.541 | | | | | | | |
| | 700- 800 | 0.888 | | | | | | | |
| | < 700 | 0.388 | | | | | | | |
| | Total | 92.147 | | | | | | | |

BENCH (51°27'N, 124°56'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| | 2800-2900 | 0.015 | 2.73 | 1.27 | + 1.46 | | | | |
| | 2700-2800 | 0.006 | 2.83 | 1.17 | + 1.66 | | | | |
| | 2600-2700 | 0.046 | 2.76 | 1.24 | + 1.52 | | | | |
| | 2500-2600 | 0.592 | 2.75 | 1.48 | + 1.27 | | | | |
| | 2400-2500 | 0.866 | 2.38 | 1.94 | + 0.44 | | | | |
| | 2300-2400 | 0.902 | 2.45 | 1.95 | + 0.50 | | | | |
| | 2200-2300 | 0.919 | 2.58 | 1.89 | + 0.69 | | | | |
| 1980- | 2100-2200 | 0.573 | 2.75 | 1.68 | + 1.07 | 01/10/80 | 25/05/81 | 08/10/81 | 1835 |
| 1981 | 2000-2100 | 0.764 | 2.75 | 1.60 | + 1.15 | | | | |
| | 1900-2000 | 0.600 | 2.52 | 1.48 | + 1.04 | | | | |
| | 1800-1900 | 1.016 | 2.09 | 1.69 | + 0.40 | | | | |
| | 1700-1800 | 2.138 | 1.47 | 3.02 | - 1.55 | | | | |
| | 1600-1700 | 1.111 | 0.79 | 4.02 | - 3.23 | | | | |
| | 1500-1600 | 0.880 | 0.38 | 4.91 | - 4.53 | | | | |
| | 1400-1500 | 0.081 | 0.25 | 5.25 | - 5.00 | | | | |
| | Total | 10.509 | 1.92 | 2.53 | - 0.61 | | | | |
| | 2800-2900 | 0.015 | 2.27 | 1.27 | + 1.00 | | | | |
| | 2700-2800 | 0.006 | 2.33 | 1.33 | + 1.00 | | | | |
| | 2600-2700 | 0.046 | 2.26 | 1.26 | + 1.00 | | | | |
| | 2500-2600 | 0.592 | 2.25 | 1.54 | + 0.71 | | | | |
| | 2400-2500 | 0.866 | 1.88 | 1.75 | + 0.13 | | | | |
| | 2300-2400 | 0.902 | 1.95 | 1.75 | + 0.20 | | | | |
| | 2200-2300 | 0.919 | 2.09 | 1.58 | + 0.51 | | | | |
| 1981- | 2100-2200 | 0.573 | 2.25 | 1.56 | + 0.69 | 08/10/81 | 11/05/82 | 30/09/82 | 1910 |
| 1982 | 2000-2100 | 0.764 | 2.25 | 1.75 | + 0.50 | | | | |
| | 1900-2000 | 0.600 | 2.20 | 1.89 | + 0.31 | | | | |
| | 1800-1900 | 1.016 | 1.86 | 2.28 | - 0.42 | | | | |
| | 1700-1800 | 2.138 | 1.55 | 3.46 | - 1.91 | | | | |
| | 1600-1700 | 1.111 | 0.99 | 4.33 | - 3.34 | | | | |
| | 1500-1600 | 0.880 | 0.84 | 4.75 | - 3.91 | | | | |
| | 1400-1500 | 0.081 | 0.90 | 4.75 | - 3.85 | | | | |
| | Total | 10.509 | 1.73 | 2.66 | - 0.93 | | | | |
| | 2800-2900 | 0.015 | 2.73 | 1.27 | + 1.53 | | | | |
| | 2700-2800 | 0.006 | 2.66 | 1.16 | + 1.50 | | | | |
| | 2600-2700 | 0.046 | 2.74 | 1.24 | + 1.50 | | | | |
| | 2500-2600 | 0.592 | 2.75 | 1.25 | + 1.50 | | | | |
| | 2400-2500 | 0.866 | 2.75 | 1.25 | + 1.50 | | | | |
| | 2300-2400 | 0.902 | 2.40 | 1.25 | + 1.15 | | | | |
| | 2200-2300 | 0.919 | 2.19 | 1.60 | + 0.59 | | | | |
| 1982- | 2100-2200 | 0.573 | 2.35 | 1.66 | + 0.69 | 30/09/82 | 19/05/83 | 29/09/83 | 1845 |
| 1983 | 2000-2100 | 0.764 | 2.42 | 1.98 | + 0.44 | | | | |
| | 1900-2000 | 0.600 | 2.56 | 2.22 | + 0.34 | | | | |
| | 1800-1900 | 1.016 | 2.28 | 2.20 | + 0.08 | | | | |
| | 1700-1800 | 2.138 | 1.66 | 3.18 | - 1.52 | | | | |
| | 1600-1700 | 1.111 | 1.01 | 3.81 | - 2.80 | | | | |
| | 1500-1600 | 0.880 | 0.34 | 4.65 | - 4.31 | | | | |
| | 1400-1500 | 0.081 | 0.00 | 4.74 | - 4.74 | | | | |
| | Total | 10.509 | 1.94 | 2.48 | - 0.54 | | | | |

BENCH (51°27'N, 124°56'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| | 2800-2900 | 0.015 | 2.73 | 0.27 | + 2.46 | | | | |
| | 2700-2800 | 0.006 | 2.83 | 0.33 | + 2.50 | | | | |
| | 2600-2700 | 0.046 | 2.76 | 0.26 | + 2.50 | | | | |
| | 2500-2600 | 0.592 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2400-2500 | 0.866 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2300-2400 | 0.902 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2200-2300 | 0.919 | 2.75 | 0.75 | + 2.00 | | | | |
| 1983- | 2100-2200 | 0.573 | 1.75 | 1.25 | + 0.50 | 29/09/83 | 06/05/84 | 18/09/84 | 1850 |
| 1984 | 2000-2100 | 0.764 | 1.75 | 1.28 | + 0.50 | | | | |
| | 1900-2000 | 0.600 | 1.75 | 1.31 | + 0.44 | | | | |
| | 1800-1900 | 1.016 | 1.75 | 1.75 | 0.00 | | | | |
| | 1700-1800 | 2.138 | 1.29 | 2.64 | - 1.35 | | | | |
| | 1600-1700 | 1.111 | 0.80 | 3.71 | - 2.91 | | | | |
| | 1500-1600 | 0.880 | 0.52 | 4.48 | - 3.96 | | | | |
| | 1400-1500 | 0.081 | 0.25 | 4.75 | - 4.50 | | | | |
| | Total | 10.509 | 1.76 | 1.95 | - 0.19 | | | | |
| | 2800-2900 | 0.015 | 2.27 | 1,27 | + 1.00 | | | | |
| | 2700-2800 | 0.006 | 2.33 | 1.33 | + 1.00 | | | | |
| | 2600-2700 | 0.046 | 2.24 | 1.26 | + 0.98 | | | | |
| | 2500-2600 | 0.592 | 1.93 | 1.25 | + 0.68 | | | | |
| | 2400-2500 | 0.866 | 1.80 | 1.75 | + 0.05 | | | | |
| | 2300-2400 | 0.902 | 1.58 | 1.94 | - 0.36 | | | | |
| | 2200-2300 | 0.919 | 1.77 | 1.95 | - 0.17 | | | | |
| 1984- | 2100-2200 | 0.573 | 2.04 | 1.84 | + 0.20 | 18/09/84 | 12/05/85 | 15/09/85 | 1990 |
| 1985 | 2000-2100 | 0.764 | 2.10 | 1.81 | + 0.29 | | | | |
| | 1900-2000 | 0.600 | 1.85 | 2.03 | - 0.18 | | | | |
| | 1800-1900 | 1.016 | 1.88 | 2.67 | - 0.79 | | | | |
| | 1700-1800 | 2.138 | 1.42 | 2.91 | - 1.49 | | | | |
| | 1600-1700 | 1.111 | 0.70 | 2.83 | - 2.13 | | | | |
| | 1500-1600 | 0.880 | 0.20 | 3.40 | - 3.20 | | | | |
| | 1400-1500 | 0.081 | 0.00 | 3.75 | - 3.75 | | | | |
| | Total | 10.509 | 1.49 | 2.37 | - 0.88 | | | | |

BRIDGE (50°49.4'N, 123°33'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| | 2800-2900 | 0.195 | 3.25 | 0.75 | + 2.50 | | | | |
| | 2700-2800 | 2.962 | 3.25 | 0.75 | + 2.50 | | | | |
| | 2600-2700 | 4.399 | 3.17 | 0.75 | + 2.42 | | | | |
| | 2500-2600 | 9.904 | 2.80 | 0.75 | + 2.05 | | | | |
| | 2400-2500 | 12.087 | 2.20 | 0.97 | + 1.23 | | | | |
| | 2300-2400 | 7.211 | 2.41 | 1.54 | + 0.87 | | | | |
| | 2200-2300 | 7.011 | 2.28 | 1.96 | + 0.31 | | | | |
| 1980-1981 | 2100-2200 | 8.377 | 1.98 | 2.20 | - 0.22 | 01/10/80 | 09/05/81 | 25/09/81 | 2190 |
| | 2000-2100 | 7.570 | 1.97 | 2.54 | - 0.57 | | | | |
| | 1900-2000 | 5.439 | 1.81 | 3.32 | - 1.51 | | | | |
| | 1800-1900 | 7.544 | 1.49 | 3.84 | - 2.35 | | | | |
| | 1700-1800 | 4.879 | 1.27 | 4.30 | - 3.02 | | | | |
| | 1600-1700 | 3.374 | 0.88 | 5.10 | - 4.21 | | | | |
| | 1500-1600 | 4.241 | 0.75 | 5.59 | - 4.84 | | | | |
| | 1400-1500 | 2.705 | 0.37 | 5.75 | - 5.38 | | | | |
| | <1400 | 0.203 | 0.25 | 5.75 | - 5.50 | | | | |
| | Total | 88.101 | 2.02 | 2.42 | - 0.40 | | | | |
| | 2800-2900 | 0.195 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2700-2800 | 2.962 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2600-2700 | 4.399 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2500-2600 | 9.904 | 2.25 | 1.25 | + 1.00 | | | | |
| | 2400-2500 | 12.087 | 1.79 | 1.01 | + 0.78 | | | | |
| | 2300-2400 | 7.211 | 2.18 | 1.76 | + 0.42 | | | | |
| | 2200-2300 | 7.011 | 2.22 | 2.24 | - 0.03 | | | | |
| 1981-1982 | 2100-2200 | 8.377 | 2.22 | 2.39 | - 0.17 | 25/09/81 | 17/05/82 | 29/09/82 | 2255 |
| | 2000-2100 | 7.570 | 2.09 | 2.81 | - 0.72 | | | | |
| | 1900-2000 | 5.439 | 1.96 | 3.54 | - 1.58 | | | | |
| | 1800-1900 | 7.544 | 1.61 | 4.11 | - 2.50 | | | | |
| | 1700-1800 | 4.879 | 1.45 | 4.10 | - 2.65 | | | | |
| | 1600-1700 | 3.374 | 1.18 | 3.72 | - 2.54 | | | | |
| | 1500-1600 | 4.241 | 0.92 | 4.12 | - 3.20 | | | | |
| | 1400-1500 | 2.705 | 0.38 | 4.75 | - 4.37 | | | | |
| | <1400 | 0.203 | 0.25 | 4.75 | - 4.50 | | | | |
| | Total | 88.101 | 1.92 | 2.43 | - 0.51 | | | | |
| | 2800-2900 | 0.195 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2700-2800 | 2.962 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2600-2700 | 4.399 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2500-2600 | 9.904 | 2.42 | 0.27 | + 2.15 | | | | |
| | 2400-2500 | 12.087 | 2.38 | 0.39 | + 1.99 | | | | |
| | 2300-2400 | 7.211 | 2.29 | 0.75 | + 1.54 | | | | |
| | 2200-2300 | 7.011 | 2.15 | 1.28 | + 0.87 | | | | |
| 1982-1983 | 2100-2200 | 8.377 | 2.19 | 1.73 | + 0.46 | 29/09/82 | 24/05/83 | 01/10/83 | 2040 |
| | 2000-2100 | 7.570 | 2.15 | 2.08 | + 0.07 | | | | |
| | 1900-2000 | 5.439 | 1.74 | 2.49 | - 0.75 | | | | |
| | 1800-1900 | 7.544 | 1.59 | 2.96 | - 1.36 | | | | |
| | 1700-1800 | 4.879 | 1.36 | 3.14 | - 1.78 | | | | |
| | 1600-1700 | 3.374 | 1.04 | 4.41 | - 3.37 | | | | |
| | 1500-1600 | 4.241 | 0.71 | 5.16 | - 4.45 | | | | |
| | 1400-1500 | 2.705 | 0.31 | 5.25 | - 4.94 | | | | |
| | <1400 | 0.203 | 0.25 | 5.25 | - 5.00 | | | | |
| | Total | 88.101 | 1.99 | 1.79 | + 0.20 | | | | |

## BRIDGE (50°49.4'N, 123°33'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1983-1984 | 2800-2900 | 0.195 | 2.25 | 0.25 | + 2.00 | 01/10/83 | 12/05/84 | 15/09/84 | 1995 |
| | 2700-2800 | 2.962 | 2.25 | 0.25 | + 2.00 | | | | |
| | 2600-2700 | 4.399 | 2.25 | 0.25 | + 2.00 | | | | |
| | 2500-2600 | 9.904 | 2.17 | 0.25 | + 1.92 | | | | |
| | 2400-2500 | 12.087 | 2.04 | 0.75 | + 1.29 | | | | |
| | 2300-2400 | 7.211 | 2.08 | 0.75 | + 1.33 | | | | |
| | 2200-2300 | 7.011 | 2.09 | 1.25 | + 0.84 | | | | |
| | 2100-2200 | 8.377 | 1.87 | 1.27 | + 0.59 | | | | |
| | 2000-2100 | 7.570 | 1.82 | 1.46 | + 0.36 | | | | |
| | 1900-2000 | 5.439 | 1.61 | 1.89 | - 0.28 | | | | |
| | 1800-1900 | 7.544 | 1.31 | 2.33 | - 1.03 | | | | |
| | 1700-1800 | 4.879 | 1.15 | 2.97 | - 1.82 | | | | |
| | 1600-1700 | 3.374 | 1.05 | 3.54 | - 2.49 | | | | |
| | 1500-1600 | 4.241 | 0.92 | 3.99 | - 3.07 | | | | |
| | 1400-1500 | 2.705 | 0.37 | 4.87 | - 4.50 | | | | |
| | <1400 | 0.203 | 0.25 | 5.25 | - 5.00 | | | | |
| | Total | 88.101 | 1.76 | 1.53 | - 0.23 | | | | |
| 1984-1985 | 2800-2900 | 0.195 | 2.25 | 1.25 | + 1.00 | 15/09/84 | 17/05/85 | 21/09/85 | 2555 |
| | 2700-2800 | 2.962 | 2.25 | 1.25 | + 1.00 | | | | |
| | 2600-2700 | 4.399 | 2.25 | 1.75 | + 0.50 | | | | |
| | 2500-2600 | 9.904 | 2.23 | 2.25 | - 0.02 | | | | |
| | 2400-2500 | 12.087 | 2.01 | 2.52 | - 0.51 | | | | |
| | 2300-2400 | 7.211 | 1.90 | 2.75 | - 0.85 | | | | |
| | 2200-2300 | 7.011 | 1.83 | 3.01 | - 1.18 | | | | |
| | 2100-2200 | 8.377 | 1.58 | 3.28 | - 1.70 | | | | |
| | 2000-2100 | 7.570 | 1.56 | 3.74 | - 2.18 | | | | |
| | 1900-2000 | 5.439 | 1.45 | 4.15 | - 2.70 | | | | |
| | 1800-1900 | 7.544 | 1.14 | 4.55 | - 3.41 | | | | |
| | 1700-1800 | 4.879 | 0.91 | 5.06 | - 4.15 | | | | |
| | 1600-1700 | 3.374 | 0.87 | 5.84 | - 4.97 | | | | |
| | 1500-1600 | 4.241 | 0.78 | 6.21 | - 5.43 | | | | |
| | 1400-1500 | 2.705 | 0.38 | 6.56 | - 6.18 | | | | |
| | <1400 | 0.203 | 0.25 | 6.75 | - 6.50 | | | | |
| | Total | 88.101 | 1.63 | 3.50 | - 1.87 | | | | |

Until 1982, the mass balance of the Bridge and Sykora glaciers was determined together as one unit.

DEVON ICE CAP (75°N, 83°W): NET MASS BALANCE DATA BY ELEVATION BAND

| Altitude m a.s.l. | Area km² | Net Annual Mass Balance: mm $H_2O$ | | | | |
|---|---|---|---|---|---|---|
| | | 1980/81 | 1981/82 | 1982/83 | 1983/84 | 1984/85 |
| 1700-1800 | 37.5 | + 192 | + 180 | + 220 | + 246 | + 250 |
| 1600-1700 | 65.0 | + 192 | + 140 | + 227 | + 238 | + 230 |
| 1500-1600 | 122.6 | + 192 | + 150 | + 227 | + 231 | + 220 |
| 1400-1500 | 115.0 | + 192 | + 150 | + 227 | + 223 | + 300 |
| 1300-1400 | 217.5 | + 110 | + 47 | + 227 | + 216 | + 95 |
| 1200-1300 | 180.0 | - 50 | + 3 | + 227 | + 208 | + 17 |
| 1100-1200 | 160.0 | - 127 | - 41 | + 227 | + 7 | - 61 |
| 1000-1100 | 235.0 | - 204 | - 85 | + 227 | - 84 | - 82 |
| 900-1000 | 192.5 | - 281 | - 129 | + 164 | - 175 | - 214 |
| 800- 900 | 95.0 | - 425 | - 170 | + 5 | - 266 | - 346 |
| 700- 800 | 82.5 | - 534 | - 320 | - 153 | - 357 | - 478 |
| 600- 700 | 75.0 | - 577 | - 470 | - 312 | - 449 | - 610 |
| 500- 600 | 70.0 | - 620 | - 630 | - 470 | - 540 | - 742 |
| 400- 500 | 10.0 | - 664 | - 780 | - 629 | - 631 | - 874 |
| 300- 400 | 12.5 | - 707 | - 930 | - 787 | - 722 | -1006 |
| 200- 300 | 12.5 | - 750 | -1090 | - 946 | - 812 | -1137 |
| 100- 200 | 7.5 | - 793 | -1240 | -1105 | - 904 | -1269 |
| 100- 200 | 5.0 | - 837 | -1390 | -1263 | - 993 | -1401 |
| Total | 1695.1 | - 146 | - 95 | + 105 | - 31 | - 108 |

## HELM GLACIER (49°57.8'N, 123°00'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 2100-2200<br>2000-2100<br>1900-2000<br>1800-1900<br>1700-1800 | | - - - DATA MISSING - - - | | | 28/09/80 | 18/05/81 | 28/09/81 | |
| | Total | | | | | | | | |
| 1981-1982 | 2100-2200 | 0.112 | 2.75 | 2.75 | 0.00 | 28/09/81 | 26/05/82 | 01/10/82 | 2130 |
| | 2000-2100 | 0.631 | 2.69 | 2.75 | - 0.06 | | | | |
| | 1900-2000 | 0.997 | 2.36 | 2.75 | - 0.38 | | | | |
| | 1800-1900 | 1.015 | 2.24 | 2.75 | - 0.51 | | | | |
| | 1700-1800 | 0.076 | 2.25 | 2.75 | - 0.50 | | | | |
| | Total | 2.831 | 2.41 | 2.75 | - 0.34 | | | | |
| 1982-1983 | 2100-2200 | 0.115 | 2.25 | 1.25 | + 1.00 | 01/10/82 | 28/05/83 | 04/10/83 | 1945 |
| | 2000-2100 | 0.561 | 2.25 | 1.75 | + 0.50 | | | | |
| | 1900-2000 | 0.868 | 2.25 | 2.24 | + 0.01 | | | | |
| | 1800-1900 | 0.866 | 1.91 | 2.92 | - 1.01 | | | | |
| | 1700-1800 | 0.025 | 2.24 | 3.76 | - 1.52 | | | | |
| | Total | 2.435 | 2.13 | 2.34 | - 0.21 | | | | |
| 1983-1984 | 2100-2200 | 0.115 | 2.25 | 1.75 | + 0.50 | 04/10/83 | 15/05/84 | 24/09/84 | 2005 |
| | 2000-2100 | 0.561 | 2.00 | 1.75 | + 0.25 | | | | |
| | 1900-2000 | 0.868 | 1.75 | 2.06 | - 0.31 | | | | |
| | 1800-1900 | 0.866 | 1.62 | 2.43 | - 0.81 | | | | |
| | 1700-1800 | 0.025 | 1.76 | 2.76 | - 1.00 | | | | |
| | Total | 2.435 | 1.79 | 2.11 | - 0.32 | | | | |
| 1984-1985 | 2100-2200 | 0.115 | 2.25 | 2.75 | - 0.50 | 24/09/84 | 22/05/85 | 28/09/85 | >2200 |
| | 2000-2100 | 0.561 | 1.96 | 2.93 | - 0.97 | | | | |
| | 1900-2000 | 0.815 | 1.64 | 3.33 | - 1.69 | | | | |
| | 1800-1900 | 0.755 | 1.47 | 4.00 | - 2.53 | | | | |
| | Total | 2.246 | 1.69 | 3.42 | - 1.73 | | | | |

**HIDDEN GLACIER (58°56'N, 63°33'W)**

**NET MASS BALANCE DATA BY ELEVATION BAND**

| Altitude<br>m a.s.l. | Area<br>$km^2$ | Balance<br>1981/82<br>m $H_2O$ | Balance<br>1982/83<br>m $H_2O$ | Balance<br>1983/84<br>m $H_2O$ |
|---|---|---|---|---|
| >1200 | 0.046 | + 1.250 | + 1.250 | + 0.750 |
| 1100-1200 | 0.089 | + 0.851 | + 1.143 | + 0.334 |
| 1000-1100 | 0.222 | + 0.252 | + 0.606 | - 0.313 |
| 900-1000 | 0.193 | - 0.424 | - 0.380 | - 1.113 |
| 800- 900 | 0.297 | - 1.019 | - 1.328 | - 1.568 |
| >800 | 0.006 | - 1.250 | - 1.250 | - 1.750 |
| Total | 0.853 | - 0.238 | - 0.213 | - 0.816 |
| Equilib. Line m a.s.l. | | 1010 | 990 | 1100 |

**MINARET GLACIER (58°53'N, 63°41'W)**

**NET MASS BALANCE DATA BY ELEVATION BAND**

| Altitude m a.s.l. | Area km$^2$ | Balance 1981/82 m $H_2O$ | Balance 1982/83 m $H_2O$ | Balance 1983/84 m $H_2O$ |
|---|---|---|---|---|
| >1500 | 0.037 | + 0.234 | + 0.291 | + 0.169 |
| 1400-1500 | 0.104 | + 1.082 | + 1.207 | + 0.817 |
| 1300-1400 | 0.277 | + 0.580 | + 0.660 | + 0.329 |
| 1200-1300 | 0.295 | - 0.455 | - 0.121 | - 0.672 |
| 1100-1200 | 0.152 | - 0.533 | - 0.086 | - 0.684 |
| 1000-1100 | 0.044 | - 0.352 | - 0.250 | - 0.500 |
| <1000 | 0.001 | - 0.250 | - 0.250 | - 0.250 |
| Total | 0.910 | + 0.056 | + 0.285 | - 0.156 |
| Equilib. Line m a.s.l. | | 1290 | 1260 | 1320 |

## PEYTO GLACIER (51°40.6'N, 116°32.8'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 3100-3200 | 0.02 | 1.83 | 0.00 | + 1.83 | 23/09/80 | 17/05/81 | 26/09/81 | 2764 |
| | 3000-3100 | 0.17 | 1.59 | 0.00 | + 1.59 | | | | |
| | 2900-3000 | 0.86 | 1.38 | 0.06 | + 1.32 | | | | |
| | 2800-2900 | 1.77 | 1.27 | 0.61 | + 0.66 | | | | |
| | 2700-2800 | 2.33 | 1.17 | 1.32 | - 0.15 | | | | |
| | 2600-2700 | 2.62 | 1.03 | 2.12 | - 1.09 | | | | |
| | 2500-2600 | 2.59 | 0.98 | 2.98 | - 2.00 | | | | |
| | 2400-2500 | 1.40 | 0.74 | 3.02 | - 2.28 | | | | |
| | 2300-2400 | 0.50 | 1.19 | 7.24 | - 6.05 | | | | |
| | 2200-2300 | 0.95 | 0.43 | 3.23 | - 2.80 | | | | |
| | 2100-2200 | 0.14 | 0.21 | 2.98 | - 2.77 | | | | |
| | Total | 13.35 | 1.03 | 2.16 | - 1.13 | | | | |
| 1981-1982 | 3100-3200 | 0.02 | 2.17 | 0.00 | + 2.17 | 26/09/81 | 20/05/82 | 11/09/82 | 2703 |
| | 3000-3100 | 0.17 | 1.92 | 0.00 | + 1.92 | | | | |
| | 2900-3000 | 0.86 | 1.78 | 0.06 | + 1.72 | | | | |
| | 2800-2900 | 1.77 | 1.62 | 0.46 | + 1.16 | | | | |
| | 2700-2800 | 2.33 | 1.43 | 1.06 | + 0.37 | | | | |
| | 2600-2700 | 2.62 | 1.27 | 1.77 | - 0.50 | | | | |
| | 2500-2600 | 2.59 | 1.16 | 2.53 | - 1.37 | | | | |
| | 2400-2500 | 1.40 | 0.83 | 2.55 | - 1.72 | | | | |
| | 2300-2400 | 0.50 | 1.20 | 6.19 | - 4.99 | | | | |
| | 2200-2300 | 0.95 | 0.41 | 2.75 | - 2.34 | | | | |
| | 2100-2200 | 0.14 | 0.25 | 2.55 | - 2.30 | | | | |
| | Total | 13.35 | 1.24 | 1.81 | - 0.56 | | | | |
| 1982-1983 | 3100-3200 | 0.02 | 1.73 | 0.00 | + 1.73 | 11/09/82 | 13/05/83 | 10/09/83 | 2656 |
| | 3000-3100 | 0.17 | 1.49 | 0.00 | + 1.49 | | | | |
| | 2900-3000 | 0.86 | 1.29 | 0.00 | + 1.29 | | | | |
| | 2800-2900 | 1.77 | 1.16 | 0.00 | + 1.16 | | | | |
| | 2700-2800 | 2.33 | 1.02 | 0.31 | + 0.71 | | | | |
| | 2600-2700 | 2.62 | 0.87 | 0.95 | - 0.08 | | | | |
| | 2500-2600 | 2.59 | 0.80 | 1.89 | - 1.09 | | | | |
| | 2400-2500 | 1.40 | 0.56 | 2.15 | - 1.59 | | | | |
| | 2300-2400 | 0.50 | 0.79 | 5.83 | - 5.04 | | | | |
| | 2200-2300 | 0.95 | 0.26 | 2.62 | - 2.36 | | | | |
| | 2100-2200 | 0.14 | 0.08 | 2.08 | - 2.00 | | | | |
| | Total | 13.35 | 0.87 | 1.26 | - 0.39 | | | | |
| 1983-1984 | 3100-3200 | 0.02 | 2.48 | 0.00 | + 2.48 | 10/09/83 | 20/05/84 | 12/09/84 | 2711 |
| | 3000-3100 | 0.17 | 2.12 | 0.00 | + 2.12 | | | | |
| | 2900-3000 | 0.86 | 1.79 | 0.10 | + 1.69 | | | | |
| | 2800-2900 | 1.77 | 1.60 | 0.58 | + 1.02 | | | | |
| | 2700-2800 | 2.33 | 1.42 | 1.13 | + 0.29 | | | | |
| | 2600-2700 | 2.62 | 1.20 | 1.76 | - 0.56 | | | | |
| | 2500-2600 | 2.59 | 1.10 | 2.45 | - 1.35 | | | | |
| | 2400-2500 | 1.40 | 0.79 | 2.46 | - 1.67 | | | | |
| | 2300-2400 | 0.50 | 1.15 | 5.88 | - 4.73 | | | | |
| | 2200-2300 | 0.95 | 0.38 | 2.60 | - 2.22 | | | | |
| | 2100-2200 | 0.14 | 0.10 | 2.36 | - 2.26 | | | | |
| | Total | 13.35 | 1.21 | 1.79 | - 0.58 | | | | |
| 1984-1985 | 3100-3200 | 0.02 | 2.50 | 0.00 | + 2.50 | 12/09/84 | 29/05/85 | 12/10/85 | 2755 |
| | 3000-3100 | 0.17 | 1.76 | 0.00 | + 1.76 | | | | |
| | 2900-3000 | 0.86 | 1.76 | 0.59 | + 1.17 | | | | |
| | 2800-2900 | 1.77 | 1.67 | 1.29 | + 0.38 | | | | |
| | 2700-2800 | 2.33 | 1.25 | 1.29 | - 0.04 | | | | |
| | 2600-2700 | 2.62 | 1.25 | 1.90 | - 0.65 | | | | |
| | 2500-2600 | 2.80 | 0.93 | 2.32 | - 1.39 | | | | |
| | 2400-2500 | 1.25 | 0.75 | 2.64 | - 1.89 | | | | |
| | 2300-2400 | 0.86 | 0.56 | 3.10 | - 2.54 | | | | |
| | 2200-2300 | 0.65 | 0.25 | 3.44 | - 3.19 | | | | |
| | 2100-2200 | 0.07 | 0.29 | 4.07 | - 3.78 | | | | |
| | Total | 13.35 | 1.13 | 1.94 | - 0.81 | | | | |

Note: Data subject to change pending review of changes in the area of the lower part of the glacier.

PLACE GLACIER (50°25.3'N, 122°36.0'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area km² | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | >2500 | 0.040 | 2.25 | 1.75 | + 0.50 | 20/09/80 | 12/05/81 | 22/09/81 | 2310 |
| | 2400-2500 | 0.200 | 2.25 | 1.75 | + 0.50 | | | | |
| | 2300-2400 | 0.467 | 2.01 | 1.84 | + 0.17 | | | | |
| | 2200-2300 | 0.296 | 1.70 | 2.09 | - 0.38 | | | | |
| | 2100-2200 | 0.637 | 1.66 | 2.22 | - 0.55 | | | | |
| | 2000-2100 | 1.325 | 1.47 | 2.73 | - 1.26 | | | | |
| | 1900-2000 | 0.738 | 1.06 | 3.75 | - 2.68 | | | | |
| | <1900 | 0.057 | 0.82 | 4.25 | - 3.42 | | | | |
| | Total | 3.760 | 1.55 | 2.64 | - 1.09 | | | | |
| 1981-1982 | >2500 | 0.040 | 2.25 | 1.75 | + 0.50 | 22/09/81 | 21/05/82 | 02/10/82 | 2305 |
| | 2400-2500 | 0.200 | 2.25 | 1.75 | + 0.50 | | | | |
| | 2300-2400 | 0.467 | 2.15 | 1.93 | + 0.23 | | | | |
| | 2200-2300 | 0.296 | 2.01 | 2.25 | - 0.24 | | | | |
| | 2100-2200 | 0.637 | 2.13 | 2.12 | + 0.01 | | | | |
| | 2000-2100 | 1.325 | 2.05 | 2.69 | - 0.64 | | | | |
| | 1900-2000 | 0.738 | 1.72 | 4.32 | - 2.61 | | | | |
| | <1900 | 0.057 | 1.25 | 5.25 | - 4.00 | | | | |
| | Total | 3.760 | 2.01 | 2.76 | - 0.75 | | | | |
| 1982-1983 | >2500 | 0.040 | 2.75 | 1.25 | + 1.50 | 02/10/82 | 02/05/83 | 02/10/83 | 2285 |
| | 2400-2500 | 0.200 | 2.75 | 1.25 | + 1.50 | | | | |
| | 2300-2400 | 0.467 | 1.89 | 1.66 | + 0.23 | | | | |
| | 2200-2300 | 0.296 | 1.66 | 1.81 | - 0.15 | | | | |
| | 2100-2200 | 0.637 | 1.82 | 2.02 | - 0.20 | | | | |
| | 2000-2100 | 1.325 | 1.72 | 2.24 | - 0.52 | | | | |
| | 1900-2000 | 0.711 | 1.31 | 2.97 | - 1.66 | | | | |
| | <1900 | 0.036 | 1.25 | 3.25 | - 2.00 | | | | |
| | Total | 3.712 | 1.74 | 2.18 | - 0.44 | | | | |
| 1983-1984 | >2500 | 0.040 | 2.25 | 1.25 | + 1.00 | 02/10/83 | 22/05/84 | 23/09/84 | 2140 |
| | 2400-2500 | 0.200 | 2.25 | 1.25 | + 1.00 | | | | |
| | 2300-2400 | 0.467 | 1.94 | 1.53 | + 0.41 | | | | |
| | 2200-2300 | 0.296 | 2.01 | 1.84 | + 0.18 | | | | |
| | 2100-2200 | 0.637 | 1.90 | 1.88 | + 0.02 | | | | |
| | 2000-2100 | 1.325 | 1.61 | 2.07 | - 0.46 | | | | |
| | 1900-2000 | 0.695 | 1.32 | 2.86 | - 1.54 | | | | |
| | <1900 | 0.037 | 1.24 | 3.24 | - 2.00 | | | | |
| | Total | 3.697 | 1.72 | 2.06 | - 0.34 | | | | |
| 1984-1985 | >2500 | 0.040 | 1.75 | 2.25 | - 0.50 | 23/09/84 | 30/04/85 | 26/09/85 | 2550 |
| | 2400-2500 | 0.200 | 1.75 | 2.25 | - 0.50 | | | | |
| | 2300-2400 | 0.467 | 1.18 | 2.75 | - 1.57 | | | | |
| | 2200-2300 | 0.296 | 1.17 | 2.78 | - 1.61 | | | | |
| | 2100-2200 | 0.637 | 1.22 | 2.90 | - 1.68 | | | | |
| | 2000-2100 | 1.325 | 1.25 | 3.07 | - 1.82 | | | | |
| | 1900-2000 | 0.695 | 1.08 | 3.93 | - 2.85 | | | | |
| | <1900 | 0.037 | 0.76 | 4.76 | - 4.00 | | | | |
| | Total | 3.697 | 1.22 | 3.10 | - 1.88 | | | | |

SENTINEL GLACIER (49°53.6'N, 122°58.9'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 2100-2200 | 0.023 | 3.74 | 2.26 | + 1.48 | 29/09/80 | 15/05/81 | 26/09/81 | 1865 |
| | 2000-2100 | 0.346 | 3.54 | 2.17 | + 1.36 | | | | |
| | 1900-2000 | 0.490 | 3.09 | 2.21 | + 0.89 | | | | |
| | 1800-1900 | 0.515 | 2.63 | 2.81 | - 0.18 | | | | |
| | 1700-1800 | 0.298 | 2.29 | 3.53 | - 1.24 | | | | |
| | 1600-1700 | 0.097 | 1.75 | 3.61 | - 1.86 | | | | |
| | Total | 1.769 | 2.85 | 2.68 | + 0.17 | | | | |
| 1981-1982 | 2100-2200 | 0.023 | 4.74 | 3.26 | + 1.48 | 26/09/81 | 27/05/82 | 04/10/82 | 1775 |
| | 2000-2100 | 0.346 | 4.67 | 3.25 | + 1.42 | | | | |
| | 1900-2000 | 0.490 | 4.56 | 3.05 | + 1.51 | | | | |
| | 1800-1900 | 0.515 | 3.75 | 3.10 | + 0.64 | | | | |
| | 1700-1800 | 0.298 | 3.26 | 3.52 | - 0.26 | | | | |
| | 1600-1700 | 0.098 | 3.02 | 2.89 | + 0.13 | | | | |
| | Total | 1.770 | 4.04 | 3.18 | + 0.86 | | | | |
| 1982-1983 | 2100-2200 | 0.023 | 4.78 | 2.22 | + 2.57 | 04/10/82 | 29/05/83 | 04/10/83 | 1690 |
| | 2000-2100 | 0.346 | 4.07 | 2.25 | + 1.82 | | | | |
| | 1900-2000 | 0.490 | 4.26 | 2.53 | + 1.73 | | | | |
| | 1800-1900 | 0.515 | 3.90 | 2.93 | + 0.97 | | | | |
| | 1700-1800 | 0.298 | 3.56 | 3.16 | + 0.40 | | | | |
| | 1600-1700 | 0.098 | 3.31 | 3.62 | - 0.32 | | | | |
| | Total | 1.770 | 3.95 | 2.75 | + 1.20 | | | | |
| 1983-1984 | 2100-2200 | 0.023 | 3.74 | 1.74 | + 2.00 | 04/10/83 | 17/05/84 | 25/09/84 | 1780 |
| | 2000-2100 | 0.346 | 3.49 | 1.85 | + 1.64 | | | | |
| | 1900-2000 | 0.490 | 3.52 | 2.14 | + 1.39 | | | | |
| | 1800-1900 | 0.515 | 3.24 | 2.53 | + 0.71 | | | | |
| | 1700-1800 | 0.298 | 2.89 | 3.15 | - 0.26 | | | | |
| | 1600-1700 | 0.098 | 2.76 | 3.43 | - 0.68 | | | | |
| | Total | 1.770 | 3.29 | 2.44 | + 0.85 | | | | |
| 1984-1985 | 2100-2200 | 0.023 | 3.26 | 2.26 | + 1.00 | 25/09/84 | 22/05/85 | 27/09/85 | 2000 |
| | 2000-2100 | 0.346 | 2.58 | 2.26 | + 1.00 | | | | |
| | 1900-2000 | 0.490 | 2.42 | 2.76 | - 0.34 | | | | |
| | 1800-1900 | 0.515 | 2.31 | 3.53 | - 1.22 | | | | |
| | 1700-1800 | 0.277 | 2.09 | 4.15 | - 2.06 | | | | |
| | 1600-1700 | 0.071 | 2.08 | 5.06 | - 2.98 | | | | |
| | Total | 1.722 | 2.36 | 3.20 | - 0.84 | | | | |

**SUPERGUKSOAK GLACIER (58°57'N, 63°47'W)**

**NET MASS BALANCE DATA BY ELEVATION BAND**

| Altitude m a.s.l. | Area $km^2$ | Balance 1981/82 m $H_2O$ | Balance 1982/83 m $H_2O$ | Balance 1983/84 m $H_2O$ |
|---|---|---|---|---|
| >1000 | 0.133 | + 1.103 | + 1.054 | + 0.506 |
| 900-1000 | 0.480 | + 0.476 | + 0.509 | - 0.171 |
| 800- 900 | 0.501 | - 0.597 | - 0.034 | - 1.177 |
| 700- 800 | 0.240 | - 0.605 | - 0.263 | - 0.913 |
| <700 | 0.041 | - 0.201 | - 0.262 | - 0.530 |
| Total | 1.395 | - 0.056 | + 0.211 | - 0.606 |
| Equilib. Line m a.s.l. | | 910 | 860 | 970 |

SYKORA GLACIER (50°52.7'N, 123°33.8'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 2700-2800 | 0.452 | 3.25 | 0.75 | + 2.50 | 01/10/80 | 08/05/81 | 24/09/81 | 2190 |
| | 2600-2700 | 1.339 | 3.17 | 0.75 | + 2.42 | | | | |
| | 2500-2600 | 2.010 | 2.80 | 0.75 | + 2.05 | | | | |
| | 2400-2500 | 3.185 | 2.20 | 0.97 | + 1.23 | | | | |
| | 2300-2400 | 2.938 | 2.41 | 1.54 | + 0.87 | | | | |
| | 2200-2300 | 3.865 | 2.28 | 1.96 | + 0.31 | | | | |
| | 2100-2200 | 4.497 | 1.98 | 2.20 | - 0.22 | | | | |
| | 2000-2100 | 2.887 | 1.97 | 2.54 | - 0.57 | | | | |
| | 1900-2000 | 1.579 | 1.81 | 3.32 | - 1.51 | | | | |
| | 1800-1900 | 1.227 | 1.49 | 3.84 | - 2.35 | | | | |
| | 1700-1800 | 0.749 | 1.27 | 4.30 | - 3.02 | | | | |
| | 1600-1700 | 0.389 | 0.88 | 5.10 | - 4.21 | | | | |
| | 1500-1600 | 0.219 | 0.75 | 5.59 | - 4.84 | | | | |
| | 1400-1500 | 0.015 | 0.33 | 5.73 | - 5.38 | | | | |
| | Total | 25.351 | 2.17 | 2.04 | + 0.13 | | | | |
| 1981-1982 | 2700-2800 | 0.452 | 2.75 | 0.75 | 2.00 | 24/09/81 | 16/05/82 | 30/09/82 | 2255 |
| | 2600-2700 | 1.339 | 2.75 | 0.75 | 2.00 | | | | |
| | 2500-2600 | 2.010 | 2.25 | 1.25 | 1.00 | | | | |
| | 2400-2500 | 3.185 | 1.79 | 1.01 | 0.78 | | | | |
| | 2300-2400 | 2.938 | 2.18 | 1.76 | 0.42 | | | | |
| | 2200-2300 | 3.865 | 2.22 | 2.24 | - 0.03 | | | | |
| | 2100-2200 | 4.497 | 2.22 | 2.39 | - 0.17 | | | | |
| | 2000-2100 | 2.887 | 2.09 | 2.81 | - 0.72 | | | | |
| | 1900-2000 | 1.579 | 1.96 | 3.54 | - 1.58 | | | | |
| | 1800-1900 | 1.227 | 1.61 | 4.11 | - 2.50 | | | | |
| | 1700-1800 | 0.749 | 1.45 | 4.10 | - 2.65 | | | | |
| | 1600-1700 | 0.389 | 1.19 | 3.72 | - 2.54 | | | | |
| | 1500-1600 | 0.219 | 0.92 | 4.12 | - 3.20 | | | | |
| | 1400-1500 | 0.015 | 0.40 | 4.73 | - 4.33 | | | | |
| | Total | 25.351 | 2.09 | 2.21 | - 0.12 | | | | |
| 1982-1983 | 2700-2800 | 0.452 | 2.75 | 0.25 | + 2.50 | 30/09/82 | 23/05/83 | 01/10/83 | 2035 |
| | 2600-2700 | 1.339 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2500-2600 | 2.010 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2400-2500 | 3.185 | 2.25 | 0.62 | + 1.62 | | | | |
| | 2300-2400 | 2.938 | 2.25 | 0.84 | + 1.41 | | | | |
| | 2200-2300 | 3.865 | 2.25 | 1.46 | + 0.78 | | | | |
| | 2100-2200 | 4.497 | 2.25 | 1.75 | + 0.50 | | | | |
| | 2000-2100 | 2.887 | 2.17 | 1.93 | + 0.25 | | | | |
| | 1900-2000 | 1.579 | 1.71 | 2.76 | - 1.06 | | | | |
| | 1800-1900 | 1.227 | 1.61 | 3.52 | - 1.91 | | | | |
| | 1700-1800 | 0.749 | 1.41 | 4.45 | - 3.04 | | | | |
| | 1600-1700 | 0.389 | 1.28 | 4.72 | - 3.45 | | | | |
| | 1500-1600 | 0.219 | 1.25 | 4.74 | - 3.50 | | | | |
| | 1400-1500 | 0.015 | 1.20 | 4.73 | - 3.53 | | | | |
| | Total | 25.351 | 2.20 | 1.56 | + 0.65 | | | | |
| 1983-1984 | 2700-2800 | 0.452 | 2.25 | 0.25 | + 2.00 | 01/10/83 | 11/05/84 | 16/09/84 | 1995 |
| | 2600-2700 | 1.339 | 2.25 | 0.25 | + 2.00 | | | | |
| | 2500-2600 | 2.010 | 2.25 | 0.25 | + 2.00 | | | | |
| | 2400-2500 | 3.185 | 2.25 | 0.75 | + 1.50 | | | | |
| | 2300-2400 | 2.938 | 2.25 | 0.76 | + 1.49 | | | | |
| | 2200-2300 | 3.865 | 1.93 | 1.25 | + 0.68 | | | | |
| | 2100-2200 | 4.497 | 1.87 | 1.25 | + 0.62 | | | | |
| | 2000-2100 | 2.887 | 1.67 | 1.37 | + 0.31 | | | | |
| | 1900-2000 | 1.579 | 1.58 | 1.81 | - 0.24 | | | | |
| | 1800-1900 | 1.227 | 1.45 | 2.24 | - 0.78 | | | | |
| | 1700-1800 | 0.749 | 1.37 | 3.00 | - 1.63 | | | | |
| | 1600-1700 | 0.389 | 0.98 | 3.25 | - 2.27 | | | | |
| | 1500-1600 | 0.219 | 0.75 | 3.25 | - 2.50 | | | | |
| | 1400-1500 | 0.015 | 0.73 | 3.27 | - 2.53 | | | | |
| | Total | 25.351 | 1.93 | 1.18 | + 0.75 | | | | |
| 1984-1985 | 2700-2800 | 0.452 | 2.25 | 1.25 | + 1.00 | 16/09/84 | 16/05/85 | 21/09/85 | 2515 |
| | 2600-2700 | 1.339 | 2.25 | 1.75 | + 0.50 | | | | |
| | 2500-2600 | 2.010 | 2.25 | 2.02 | + 0.23 | | | | |
| | 2400-2500 | 3.185 | 1.75 | 2.25 | - 0.50 | | | | |
| | 2300-2400 | 2.938 | 1.75 | 2.40 | - 0.65 | | | | |
| | 2200-2300 | 3.865 | 1.52 | 2.73 | - 1.21 | | | | |
| | 2100-2200 | 4.497 | 1.31 | 3.11 | - 1.80 | | | | |
| | 2000-2100 | 2.887 | 1.24 | 3.31 | - 2.07 | | | | |
| | 1900-2000 | 1.579 | 1.19 | 3.86 | - 2.67 | | | | |
| | 1800-1900 | 1.227 | 1.16 | 4.27 | - 3.11 | | | | |
| | 1700-1800 | 0.749 | 1.93 | 4.91 | - 3.98 | | | | |
| | 1600-1700 | 0.389 | 0.46 | 5.25 | - 4.79 | | | | |
| | 1500-1600 | 0.219 | 0.26 | 5.25 | - 4.99 | | | | |
| | 1400-1500 | 0.015 | 0.27 | 5.27 | - 5.00 | | | | |
| | Total | 25.351 | 1.53 | 2.90 | - 1.37 | | | | |

Until 1982, the mass balance of the Bridge and Sykora glaciers was determined together as one unit.

TIEDEMANN (51°30'N, 125°00'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| | 3400-3900 | 0.527 | 2.75 | 0.75 | + 2.00 | | | | |
| | 3300-3400 | 0.285 | 2.75 | 0.75 | + 2.00 | | | | |
| | 3200-3300 | 1.063 | 2.75 | 0.75 | + 2.00 | | | | |
| | 3100-3200 | 0.896 | 2.75 | 0.75 | + 2.00 | | | | |
| | 3000-3100 | 1.365 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2900-3000 | 1.111 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2800-2900 | 1.674 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2700-2800 | 2.008 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2600-2700 | 1.846 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2500-2600 | 1.902 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2400-2500 | 1.923 | 2.58 | 1.25 | + 1.33 | | | | |
| | 2300-2400 | 1.952 | 2.53 | 3.48 | - 0.95 | | | | |
| | 2200-2300 | 2.576 | 2.54 | 3.33 | - 0.79 | | | | |
| 1980- | 2100-2200 | 3.231 | 2.48 | 2.38 | + 1.00 | 01/10/80 | 24/05/81 | 07/10/81 | 1845 |
| 1981 | 2000-2100 | 3.391 | 2.49 | 2.42 | + 0.07 | | | | |
| | 1900-2000 | 4.159 | 2.33 | 2.04 | + 0.29 | | | | |
| | 1800-1900 | 4.502 | 1.91 | 1.84 | + 0.07 | | | | |
| | 1700-1800 | 3.771 | 1.87 | 2.45 | - 0.58 | | | | |
| | 1600-1700 | 3.014 | 2.00 | 2.86 | - 0.86 | | | | |
| | 1500-1600 | 4.294 | 1.80 | 3.62 | - 1.82 | | | | |
| | 1400-1500 | 3.333 | 1.66 | 4.24 | - 2.58 | | | | |
| | 1300-1400 | 2.425 | 1.24 | 4.66 | - 3.42 | | | | |
| | 1200-1300 | 2.235 | 0.74 | 5.10 | - 4.36 | | | | |
| | 1100-1200 | 2.720 | 0.08 | 5.45 | - 5.37 | | | | |
| | 1000-1100 | 2.935 | 0.00 | 5.99 | - 5.99 | | | | |
| | 900-1000 | 1.483 | 0.00 | 6.98 | - 6.98 | | | | |
| | 800- 900 | 1.378 | 0.00 | 8.25 | - 8.25 | | | | |
| | 700- 800 | 0.695 | 0.00 | 8.25 | - 8.25 | | | | |
| | Total | 62.694 | 1.87 | 3.03 | - 1.16 | | | | |
| | 3400-3900 | 0.527 | 3.75 | 1.25 | + 2.50 | | | | |
| | 3300-3400 | 0.285 | 2.75 | 1.25 | + 1.50 | | | | |
| | 3200-3300 | 1.063 | 2.75 | 1.34 | + 1.41 | | | | |
| | 3100-3200 | 0.896 | 2.75 | 1.75 | + 1.00 | | | | |
| | 3000-3100 | 1.365 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2900-3000 | 1.111 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2800-2900 | 1.674 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2700-2800 | 2.008 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2600-2700 | 1.846 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2500-2600 | 1.902 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2400-2500 | 1.923 | 2.75 | 1.75 | + 1.00 | | | | |
| | 2300-2400 | 1.952 | 2.75 | 1.78 | + 0.97 | | | | |
| | 2200-2300 | 2.576 | 2.75 | 2.16 | + 0.59 | | | | |
| 1981- | 2100-2200 | 3.231 | 2.37 | 2.51 | - 0.14 | 07/10/81 | 12/05/82 | 29/09/82 | 2155 |
| 1982 | 2000-2100 | 3.391 | 2.33 | 2.95 | - 0.62 | | | | |
| | 1900-2000 | 4.159 | 2.28 | 3.35 | - 1.07 | | | | |
| | 1800-1900 | 4.502 | 2.28 | 3.75 | - 1.47 | | | | |
| | 1700-1800 | 3.771 | 2.14 | 3.95 | - 1.81 | | | | |
| | 1600-1700 | 3.014 | 2.04 | 4.03 | - 1.99 | | | | |
| | 1500-1600 | 4.294 | 2.00 | 4.13 | - 2.13 | | | | |
| | 1400-1500 | 3.333 | 1.99 | 4.23 | - 2.24 | | | | |
| | 1300-1400 | 2.425 | 1.70 | 4.49 | - 2.79 | | | | |
| | 1200-1300 | 2.235 | 1.25 | 4.75 | - 3.50 | | | | |
| | 1100-1200 | 2.720 | 1.15 | 4.77 | - 3.62 | | | | |
| | 1000-1100 | 2.935 | 0.75 | 5.10 | - 4.35 | | | | |
| | 900-1000 | 1.483 | 0.55 | 5.85 | - 5.30 | | | | |
| | 800- 900 | 1.378 | 0.35 | 7.11 | - 6.76 | | | | |
| | 700- 800 | 0.695 | 0.25 | 7.25 | - 7.00 | | | | |
| | Total | 62.694 | 2.09 | 3.42 | - 1.33 | | | | |

## TIEDEMANN (51°19'30"N, 125°00'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1982-1983 | 3400-3900 | 0.527 | 2.75 | 0.25 | + 2.50 | 29/09/82 | 15/05/83 | 29/09/83 | 1880 |
| | 3300-3400 | 0.285 | 2.75 | 0.25 | + 2.50 | | | | |
| | 3200-3300 | 1.063 | 2.75 | 0.25 | + 2.50 | | | | |
| | 3100-3200 | 0.896 | 2.75 | 0.25 | + 2.50 | | | | |
| | 3000-3100 | 1.365 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2900-3000 | 1.111 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2800-2900 | 1.674 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2700-2800 | 2.008 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2600-2700 | 1.846 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2500-2600 | 1.902 | 2.75 | 0.76 | + 1.99 | | | | |
| | 2400-2500 | 1.923 | 2.71 | 0.77 | + 1.94 | | | | |
| | 2300-2400 | 1.952 | 2.71 | 0.79 | + 1.92 | | | | |
| | 2200-2300 | 2.576 | 2.64 | 1.24 | + 1.40 | | | | |
| | 2100-2200 | 3.231 | 2.64 | 1.37 | + 1.27 | | | | |
| | 2000-2100 | 3.391 | 2.60 | 1.78 | + 0.83 | | | | |
| | 1900-2000 | 4.159 | 2.26 | 1.98 | + 0.28 | | | | |
| | 1800-1900 | 4.502 | 2.26 | 1.38 | + 0.12 | | | | |
| | 1700-1800 | 3.771 | 2.22 | 2.54 | - 0.32 | | | | |
| | 1600-1700 | 3.014 | 2.12 | 2.49 | - 0.37 | | | | |
| | 1500-1600 | 4.294 | 2.07 | 2.94 | - 0.87 | | | | |
| | 1400-1500 | 3.333 | 2.02 | 3.79 | - 1.77 | | | | |
| | 1300-1400 | 2.425 | 1.67 | 4.24 | - 2.57 | | | | |
| | 1200-1300 | 2.235 | 0.92 | 4.48 | - 3.56 | | | | |
| | 1100-1200 | 2.720 | 0.57 | 4.92 | - 4.35 | | | | |
| | 1000-1100 | 2.935 | 0.25 | 5.28 | - 5.03 | | | | |
| | 900-1000 | 1.483 | 0.00 | 7.34 | - 7.34 | | | | |
| | 800- 900 | 1.378 | 0.00 | 9.41 | - 9.41 | | | | |
| | 700- 800 | 0.695 | 0.00 | 9.75 | - 9.75 | | | | |
| | Total | 62.694 | 2.04 | 2.63 | - 0.59 | | | | |
| 1983-1984 | 3400-3900 | 0.527 | 3.10 | 0.00 | + 3.10 | 29/09/83 | 05/05/84 | 19/09/84 | 1685 |
| | 3300-3400 | 0.285 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3200-3300 | 1.063 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3100-3200 | 0.896 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3000-3100 | 1.365 | 2.75 | 0.00 | + 2.75 | | | | |
| | 2900-3000 | 1.111 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2800-2900 | 1.674 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2700-2800 | 2.008 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2600-2700 | 1.846 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2500-2600 | 1.902 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2400-2500 | 1.923 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2300-2400 | 1.952 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2200-2300 | 2.576 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2100-2200 | 3.231 | 2.75 | 0.87 | + 1.88 | | | | |
| | 2000-2100 | 3.391 | 2.53 | 0.99 | + 1.54 | | | | |
| | 1900-2000 | 4.159 | 2.31 | 1.31 | + 1.00 | | | | |
| | 1800-1900 | 4.502 | 2.31 | 1.46 | + 0.85 | | | | |
| | 1700-1800 | 3.771 | 2.31 | 1.69 | + 0.62 | | | | |
| | 1600-1700 | 3.014 | 2.36 | 2.03 | + 0.33 | | | | |
| | 1500-1600 | 4.294 | 2.09 | 2.24 | - 0.15 | | | | |
| | 1400-1500 | 3.333 | 1.97 | 2.47 | - 0.50 | | | | |
| | 1300-1400 | 2.425 | 1.65 | 3.12 | - 1.47 | | | | |
| | 1200-1300 | 2.235 | 1.10 | 4.02 | - 2.92 | | | | |
| | 1100-1200 | 2.720 | 0.68 | 4.32 | - 3.64 | | | | |
| | 1000-1100 | 2.935 | 0.33 | 4.27 | - 3.94 | | | | |
| | 900-1000 | 1.483 | 0.25 | 5.48 | - 5.23 | | | | |
| | 800- 900 | 1.378 | 0.07 | 7.01 | - 6.94 | | | | |
| | 700- 800 | 0.695 | 0.00 | 7.54 | - 7.54 | | | | |
| | Total | 62.694 | 1.87 | 3.03 | - 1.16 | | | | |

TIEDEMANN (51°30'N, 125°00'W) GLACIER: SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| | 3400-3900 | 0.527 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3300-3400 | 0.285 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3200-3300 | 1.063 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3100-3200 | 0.896 | 2.75 | 0.00 | + 2.75 | | | | |
| | 3000-3100 | 1.365 | 2.75 | 0.00 | + 2.75 | | | | |
| | 2900-3000 | 1.111 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2800-2900 | 1.674 | 2.75 | 0.25 | + 2.50 | | | | |
| | 2700-2800 | 2.008 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2600-2700 | 1.846 | 2.75 | 0.75 | + 2.00 | | | | |
| | 2500-2600 | 1.902 | 2.75 | 1.02 | + 1.73 | | | | |
| | 2400-2500 | 1.923 | 2.25 | 1.33 | + 0.92 | | | | |
| | 2300-2400 | 1.952 | 2.25 | 1.60 | + 0.65 | | | | |
| | 2200-2300 | 2.576 | 2.25 | 1.83 | + 0.42 | | | | |
| 1984-1985 | 2100-2200 | 3.231 | 2.25 | 1.97 | + 0.28 | 19/09/84 | 12/05/85 | 15/09/85 | 2080 |
| | 2000-2100 | 3.391 | 2.25 | 2.31 | + 0.06 | | | | |
| | 1900-2000 | 4.159 | 1.91 | 2.50 | - 0.59 | | | | |
| | 1800-1900 | 4.502 | 1.86 | 2.89 | - 1.03 | | | | |
| | 1700-1800 | 3.771 | 1.87 | 3.10 | - 1.23 | | | | |
| | 1600-1700 | 3.014 | 1.78 | 3.29 | - 1.51 | | | | |
| | 1500-1600 | 4.294 | 1.75 | 3.80 | - 2.05 | | | | |
| | 1400-1500 | 3.333 | 1.75 | 4.52 | - 2.77 | | | | |
| | 1300-1400 | 2.425 | 1.38 | 5.10 | - 3.72 | | | | |
| | 1200-1300 | 2.235 | 1.06 | 6.02 | - 4.96 | | | | |
| | 1100-1200 | 2.720 | 0.75 | 6.31 | - 5.56 | | | | |
| | 1000-1100 | 2.935 | 0.50 | 6.40 | - 5.90 | | | | |
| | 900-1000 | 1.483 | 0.43 | 8.03 | - 7.60 | | | | |
| | 800- 900 | 1.378 | 0.09 | 10.60 | -10.51 | | | | |
| | 700- 800 | 0.695 | 0.00 | 10.75 | -10.75 | | | | |
| | Total | 62.694 | 1.86 | 3.23 | - 1.37 | | | | |

YURI GLACIER (56°58'N, 130°42.2'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Winter To | Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 2000-2100 | 0.104 | 1.75 | 0.75 | + 1.00 | 23/09/80 | 04/05/81 | 01/10/81 | 1745 |
| | 1900-2000 | 0.584 | 1.75 | 0.75 | + 1.00 | | | | |
| | 1800-1900 | 0.626 | 1.64 | 0.98 | + 0.66 | | | | |
| | 1700-1800 | 0.860 | 1.54 | 1.47 | + 0.07 | | | | |
| | 1600-1700 | 0.674 | 1.27 | 2.25 | - 0.98 | | | | |
| | 1500-1600 | 0.390 | 1.25 | 2.60 | - 1.35 | | | | |
| | 1400-1500 | 0.338 | 1.18 | 2.60 | - 1.42 | | | | |
| | 1300-1400 | 0.002 | 1.50 | 3.00 | - 1.50 | | | | |
| | Total | 3.578 | 1.48 | 1.62 | - 0.14 | | | | |
| 1981-1982 | 2000-2100 | 0.104 | 1.75 | 1.25 | + 0.50 | 01/10/81 | 04/05/82 | 26/09/82 | 1930 |
| | 1900-2000 | 0.584 | 1.75 | 1.65 | + 0.10 | | | | |
| | 1800-1900 | 0.626 | 1.49 | 1.96 | - 0.47 | | | | |
| | 1700-1800 | 0.860 | 1.25 | 2.38 | - 1.13 | | | | |
| | 1600-1700 | 0.674 | 1.25 | 2.60 | - 1.35 | | | | |
| | 1500-1600 | 0.390 | 0.89 | 2.75 | - 1.86 | | | | |
| | 1400-1500 | 0.338 | 1.02 | 2.96 | - 1.94 | | | | |
| | 1300-1400 | 0.002 | 1.50 | 3.50 | - 2.00 | | | | |
| | Total | 3.578 | 1.33 | 2.29 | - 0.96 | | | | |
| 1982-1983 | 2000-2100 | 0.104 | 1.75 | 1.75 | 0.00 | 26/09/82 | 11/05/83 | 26/09/83 | 1960 |
| | 1900-2000 | 0.584 | 1.74 | 1.74 | 0.00 | | | | |
| | 1800-1900 | 0.626 | 1.25 | 2.25 | - 1.00 | | | | |
| | 1700-1800 | 0.860 | 1.16 | 2.25 | - 1.09 | | | | |
| | 1600-1700 | 0.674 | 0.81 | 2.25 | - 1.44 | | | | |
| | 1500-1600 | 0.390 | 0.73 | 2.61 | - 1.88 | | | | |
| | 1400-1500 | 0.338 | 0.71 | 2.75 | - 2.04 | | | | |
| | 1300-1400 | 0.002 | 0.50 | 2.50 | - 2.00 | | | | |
| | Total | 3.578 | 1.13 | 2.24 | - 1.11 | | | | |
| 1983-1984 | 2000-2100 | 0.104 | 1.25 | 0.25 | + 1.00 | 26/09/83 | 27/04/84 | 11/09/84 | 1665 |
| | 1900-2000 | 0.584 | 1.19 | 0.62 | + 0.57 | | | | |
| | 1800-1900 | 0.626 | 1.28 | 0.75 | + 0.53 | | | | |
| | 1700-1800 | 0.860 | 1.25 | 0.75 | + 0.50 | | | | |
| | 1600-1700 | 0.674 | 1.25 | 1.28 | - 0.03 | | | | |
| | 1500-1600 | 0.390 | 1.15 | 1.83 | - 0.68 | | | | |
| | <1500 | 0.338 | 1.02 | 2.25 | - 1.23 | | | | |
| | Total | 3.576 | 1.21 | 1.07 | + 0.14 | | | | |
| 1984-1985 | 2000-2100 | 0.104 | 1.75 | | | 11/09/84 | 09/05/85 | | |
| | 1900-2000 | 0.584 | 1.68 | | | | | | |
| | 1800-1900 | 0.626 | 1.75 | | | | | | |
| | 1700-1800 | 0.860 | 1.75 | PROJECT TERMINATED | | | | | |
| | 1600-1700 | 0.674 | 1.58 | | | | | | |
| | 1500-1600 | 0.390 | 1.23 | | | | | | |
| | <1500 | 0.338 | 1.02 | | | | | | |
| | Total | 3.576 | 1.58 | | | | | | |

## ZAVISHA GLACIER (50°48.4'N, 123°25.3'W): SPECIFIC MASS BALANCE DATA BY ELEVATION BAND

| Year | Altitude m a.s.l. | Area $km^2$ | Winter Balance m $H_2O$ | Summer Balance m $H_2O$ | Net Balance m $H_2O$ | Balance Period Start | Balance Period Winter To | Balance Period Summer To | Equilib. Line m a.s.l. |
|---|---|---|---|---|---|---|---|---|---|
| 1980-1981 | 2400-2500 | 0.552 | 2.75 | 1.75 | + 1.00 | 01/10/80 | 08/05/81 | 24/09/81 | 2315 |
| | 2300-2400 | 1.700 | 2.36 | 2.24 | + 0.12 | | | | |
| | 2200-2300 | 2.498 | 2.05 | 2.29 | - 0.24 | | | | |
| | 2100-2200 | 1.442 | 1.97 | 2.74 | - 0.77 | | | | |
| | 2000-2100 | 0.300 | 1.75 | 2.99 | - 1.24 | | | | |
| | Total | 6.492 | 2.16 | 2.36 | - 0.20 | | | | |
| 1981-1982 | 2400-2500 | 0.552 | 2.25 | 1.75 | + 0.50 | 24/09/81 | 15/05/82 | 30/09/82 | 2360 |
| | 2300-2400 | 1.700 | 1.98 | 2.00 | - 0.02 | | | | |
| | 2200-2300 | 2.498 | 1.93 | 2.44 | - 0.51 | | | | |
| | 2100-2200 | 1.442 | 1.90 | 3.23 | - 1.33 | | | | |
| | 2000-2100 | 0.300 | 2.00 | 3.50 | - 1.50 | | | | |
| | Total | 6.492 | 1.97 | 2.49 | - 0.52 | | | | |
| 1982-1983 | 2400-2500 | 0.552 | 1.96 | 1.25 | + 0.71 | 30/09/82 | 22/05/83 | 01/10/83 | 2170 |
| | 2300-2400 | 1.700 | 1.90 | 1.25 | + 0.65 | | | | |
| | 2200-2300 | 2.498 | 2.03 | 1.56 | + 0.45 | | | | |
| | 2100-2200 | 1.442 | 1.75 | 1.85 | - 0.10 | | | | |
| | 2000-2100 | 0.300 | 1.75 | 2.25 | - 0.50 | | | | |
| | Total | 6.492 | 1.92 | 1.55 | + 0.37 | | | | |
| 1983-1984 | 2400-2500 | 0.552 | 1.75 | 0.75 | + 1.00 | 01/10/83 | 10/05/84 | 16/09/84 | 2195 |
| | 2300-2400 | 1.700 | 1.54 | 0.87 | + 0.67 | | | | |
| | 2200-2300 | 2.498 | 1.64 | 1.24 | + 0.40 | | | | |
| | 2100-2200 | 1.442 | 1.40 | 1.75 | - 0.35 | | | | |
| | 2000-2100 | 0.300 | 1.25 | 1.75 | - 0.50 | | | | |
| | Total | 6.492 | 1.55 | 1.24 | + 0.31 | | | | |
| 1984-1985 | 2400-2500 | 0.552 | 1.75 | 2.54 | - 0.79 | 16/09/84 | 16/05/85 | 21/09/85 | 2500 |
| | 2300-2400 | 1.700 | 1.38 | 2.67 | - 1.29 | | | | |
| | 2200-2300 | 2.498 | 1.51 | 2.57 | - 1.06 | | | | |
| | 2100-2200 | 1.442 | 1.25 | 2.75 | - 1.50 | | | | |
| | 2000-2100 | 0.300 | 1.25 | 2.75 | - 1.50 | | | | |
| | Total | 6.492 | 1.43 | 2.64 | - 1.21 | | | | |

## 6.0: CHANGES IN THICKNESS, AREA AND VOLUME

In this section, readers will notice the effect of the decision by the Water Survey of Canada to cancel its biennial glacier surveys, reported on previously. For the first time since information on Canadian glaciers has been reported to Unesco, there is no solid body of information on recent volumetric changes for the Athabasca and Saskatchewan glaciers in Alberta and for the Bugaboo, Kokanee, Nadahini, Sentinel and Sphinx glaciers in British Columbia. The maps, reports, data and original field survey information are still in Ottawa and can be obtained from:

Water Survey of Canada,
Inland Waters Directorate,
Environment Canada,
Ottawa, Ontario, K1A 0E7.

The data set on Caltha Lake Glacier represents one of a number of such determinations being made by Karl Ricker in conjunction with the Surveying Department of the BC Institute of Technology. It is expected that data for Wedgemount Glacier will be compiled in time for the next WGMS report.

## VOLUMETRIC ICE LOSSES OF GLACIER - CALTHA LAKE GLACIER

| Year (AD) | Average thickness (m) | Area $m^2 \times 10^6$ | Volume $m^3 \times 10^6$ | Volume lost in time interval ($m^3$) | % Volume loss since climax |
|---|---|---|---|---|---|
| 1895* (Climax) | 67.4 | 0.567 | 38.2 | initial volume | |
| | | | | 37.5 | ~ 0.00 |
| 1912* (Subclimax) | ~ 67.4 | 0.567 Note 1 | Note 1 | | |
| | | | | < or ≈37.5 | ~ 98.1 |
| 1951 | 4 | 0.180 | 719 | | |
| | | | | 635 | ~ 99.8 |
| 1983 | 2 | 0.042 | 84 | | |

Note 1: A partially double-crested moraine denotes the outer "climax" and inner "subclimax" ice level stages in the cirque. Where there is only a single crest (about 1/3 of the length of the end moraine) the two stages are one and the same, there is no evidence of two ice levels on the cirque headwall; yet the two moraine crests, where 10 m apart, would suggest slightly less ice volume at the subclimax which cannot be quantitatively measured. So, ice volume differences between the two stages are assumed to be negligible.

*Lichenometric ages. Further work using various extrapolation techniques on two lichen curves (Jasper National Park and Mt. Baker area) yield six ages for each moraine grouped as follows:

Climax = 1898 ± 7 years
Subclimax = 1914 ± 9 years

(Data provided by Karl Ricker, West Vancouver, B.C.)

## 7.0: AVAILABILITY OF HYDROMETEOROLOGICAL DATA

At most of the glacier stations operated by the National Hydrology Research Institute, some hydrometeorological data are collected. Problems definitely exist with regard to the reliability of most of the meteorological data as the records have been collected intermittently and the instruments are seldom calibrated. It is likely that any of the other glacier stations that have been occupied regularly of for extended periods, also have some hydrometeorological records.

Canada has a national network that provides hydrological data for most of the country. Data are collected by the Water Survey of Canada and are available in published reports or as data tapes from the:

Water Survey of Canada,
Inland Waters Directorate,
Environment Canada,
Ottawa, Ontario, K1A 0E7.

These data will include gauge records from water-level recorders installed on the glacial outlet streams. Additional stations are also maintained by Provincial agencies to whom referral could be made through the Water Survey of Canada.

Meteorological data for all reporting weather stations in the vicinity of glaciers are collected and published by the:

Atmospheric Environment Service,
Environment Canada,
4905 Dufferin Street,
Downsview, Ontario, M3H 5T4.

Arctic weather station data are published in the Arctic Summary. Most of the glacier research programs include the collection of some meteorological data and a few stations have year-round recorders or data collection platforms (DCP) linked to Ottawa by satellite. Further information may be obtained from the principal investigators and their sponsoring agencies.

WORLD GLACIER MONITORING SERVICE
**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory

2. Glacier number 0133

3. Glacier name ALEXANDER

4. Streamflow gaging station(s)

Name More Creek, station No. 08CG005

Geogr. location Near the confluence of More Creek and Iskut River

Geogr. co-ordinates

Altitude (m a.s.l.) ± 415 m

Drainage area ($km^2$) 894 $km^2$

Full address where data available Water Survey of Canada, Terrace, British Columbia

5. Meteorological station(s)

Name Andrei Glacier base camp site

Geogr. location Rock outcrop between Andrei Glacier and Forrest Kerr Glacier

Geogr. co-ordinates 56° 55' 10" N, 130° 54' 30" W

Altitude (m a.s.l.) 1100 m

Full address where data available B.C. Hydro, Hydroelectric Generation Projects Division, Vancouver, British Columbia

6. Remarks
Project terminated for meteorological station

7. Data sheet compiled by
O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



| Leave blank | | | |
|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory: CD

2. Glacier number: 0148

3. Glacier name: ANDREI

4. Streamflow gaging station(s)

Name: Forrest Kerr Creek

Geogr. location: Periglacial zone on stream draining Andrei and Forrest Kerr glaciers.

Geogr. co-ordinates: 56° 55' 05" N, 130° 43' 30" W

Altitude (m a.s.l.): 500 m

Drainage area ($km^2$): 287 $km^2$

Full address where data available: Water Survey of Canada, Terrace, British Columbia.

5. Meteorological station(s)

Name: Andrei Glacier camp site

Geogr. location: Rock outcrop between Andrei and Forrest Kerr glaciers

Geogr. co-ordinates: 56° 55' 10" N, 130° 54' 30" W

Altitude (m a.s.l.): 1100 m

Full address where data available: B.C. Hydro, Hydroelectric Generation Projects Division, Vancouver, British Columbia

6. Remarks

Project terminated for meteorological station.

7. Data sheet compiled by

O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory: CD

2. Glacier number: 0210

3. Glacier name: BARNES ICE CAP

4. Streamflow gaging station(s)

Name

Geogr. location

Geogr. co-ordinates

Altitude (m a.s.l.)

Drainage area ($km^2$)

Full address where data available

5. Meteorological station(s)

Name: Dewar Lakes

Geogr. location: About 120 km south of the ice cap in the middle of Baffin Island. Elevation of Dewar Lakes is comparable to that of the ice cap margin.

Geogr. co-ordinates: $68^{o}39'N$; $71^{o}14'W$

Altitude (m a.s.l.): 518

Full address where data available: Atmospheric Environment Service, Environment Canada
4905 Dufferin Street, Downsview, Ontario, M3H 5T4

6. Remarks

7. Data sheet compiled by



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WORLD GLACIER MONITORING SERVICE
**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory: CD
2. Glacier number: 0275
3. Glacier name: BRIDGE

4. Streamflow gaging station(s)

Name: Bridge River

Geogr. location: Periglacial zone on stream draining Bridge Glacier

Geogr. co-ordinates: 50° 51' 15" N; 123° 26' 00" W

Altitude (m a.s.l.): 1360 m

Drainage area ($km^2$): ± 95 $km^2$

Full address where data available: Water Survey of Canada, Vancouver, British Columbia

5. Meteorological station(s)

Name: Bridge Glacier

Geogr. location: Periglacial zone of Bridge Glacier

Geogr. co-ordinates: 50° 51' 15" N, 123° 26' 00" W

Altitude (m a.s.l.): 1360 m

Full address where data available: B.C. Hydro, Hydrology Department, Burnaby British Columbia

6. Remarks
Data provided from Data Collection Platform (DCP)

7. Data sheet compiled by
O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



Leave blank

WORLD GLACIER MONITORING SERVICE

# HYDROMETEOROLOGICAL DATA 1980-85

Leave blank

1. Country or territory: CD
2. Glacier number: 0855
3. Glacier name: HELM
4. Streamflow gaging station(s)
   - Name: Stream not gauged.
   - Geogr. location:
   - Geogr. co-ordinates:
   - Altitude (m a.s.l.):
   - Drainage area ($km^2$):
   - Full address where data available:
5. Meteorological station(s)
   - Name: Sentinel Glacier camp site
   - Geogr. location: Periglacial zone of Sentinel Glacier
   - Geogr. co-ordinates: 49° 54' 05" N, 122° 59' 51" W
   - Altitude (m a.s.l.): 1540 m
   - Full address where data available: National Hydrology Research Institute, Environment Canada, 11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5
6. Remarks
   Data collection is irregular
7. Data sheet compiled by
   O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# HYDROMETEOROLOGICAL DATA 1980-85

Leave blank

1. Country or territory: CD

2. Glacier number: 1640

3. Glacier name: PEYTO

4. Streamflow gaging station(s)

Name: Peyto Creek at Peyto Glacier
Station 5DA-8

Geogr. location: At downstream end of narrow gorge of Peyto Creek

Geogr. co-ordinates: 51° 41' 37" N, 116° 32' 08" W

Altitude (m a.s.l.): 1951 m

Drainage area ($km^2$): 22.3 $km^2$

Full address where data available: Water Survey of Canada, Environment Canada, Ottawa, Ontario, K1A 0E7

5. Meteorological station(s)

Name: Peyto Glacier base camp

Geogr. location: On marginal moraine west of the glacier snout.

Geogr. co-ordinates: 51° 41' 10" N, 116° 32' 45" W

Altitude (m a.s.l.): 2251 m

Full address where data available: National Hydrology Research Institute, Environment Canada, 11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5

6. Remarks
Data collection irregular

7. Data sheet compiled by
M. Demuth, National Hydrology Research Institute, Environment Canada



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WORLD GLACIER MONITORING SERVICE
HYDROMETEOROLOGICAL DATA 1980-85

Leave blank

1. Country or territory: CD

2. Glacier number: 1660

3. Glacier name: PLACE

4. Streamflow gaging station(s)

Name: Place Creek near Birken
Station 8MG-19

Geogr. location: Periglacial zone on stream draining Place Glacier

Geogr. co-ordinates: 50° 21' 02" N, 122° 36' 35" W

Altitude (m a.s.l.): 1800 m

Drainage area ($km^2$): 6.5 $km^2$

Full address where data available: Water Survey of Canada, Vancouver, British Columbia

5. Meteorological station(s)

Name: Place Glacier base camp site

Geogr. location: Periglacial zone of Place Glacier

Geogr. co-ordinates: 50° 26' 11" N, 122° 36' 35" W

Altitude (m a.s.l.): 1840 m

Full address where data available: National Hydrology Research Institute, Environment Canada, 11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5

6. Remarks
Data collection is irregular

7. Data sheet compiled by
O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



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WORLD GLACIER MONITORING SERVICE

**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory: CD
2. Glacier number: 1915
3. Glacier name: SENTINEL

4. Streamflow gaging station(s)

Name: Sentinel Creek above Garibaldi Lake
Station 8GA-56

Geogr. location: On stream between Sentinel Glacier and Garibaldi Lake

Geogr. co-ordinates: 49° 53' 54" N, 122° 59' 34" W

Altitude (m a.s.l.): 1500 m

Drainage area ($km^2$): 5.61 $km^2$

Full address where data available: Water Survey of Canada, Vancouver, British Columbia

5. Meteorological station(s)

Name: Sentinel Glacier camp site

Geogr. location: Periglacial zone of Sentinel Glacier

Geogr. co-ordinates: 49° 54'05" N, 122° 59' 51" W

Altitude (m a.s.l.): 1540 m

Full address where data available: National Hydrology Research Institute, Enviornment Canada, 11 Innovation Boulevard, Saskatoon, Saskatchewan, S7N 3H5

6. Remarks
Data collection irregular

7. Data sheet compiled by
O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE

# HYDROMETEOROLOGICAL DATA 1980-85

Leave blank

1. Country or territory CD

2. Glacier number 1995

3. Glacier name SYKORA

4. Streamflow gaging station(s)

Name stream not gauged

Geogr. location

Geogr. co-ordinates

Altitude (m a.s.l.)

Drainage area ($km^2$)

Full address where data available

5. Meteorological station(s)

Name Bridge Glacier

Geogr. location Periglacial zone of Bridge Glacier

Geogr. co-ordinates 50° 51' 15" N, 123° 26' 00" W

Altitude (m a.s.l.) 1360 m

Full address where data available B.C. Hydro, Hydrology Department, Burnaby, British Columbia

6. Remarks

Data provided from Data Collection Platform (DCP)

7. Data sheet compiled by

O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



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|---|---|---|---|

WORLD GLACIER MONITORING SERVICE
**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory: CD
2. Glacier number: 2530
3. Glacier name: YUAI

4. Streamflow gaging station(s)

Name: More Creek; station No. 08CG005

Geogr. location: Near the confluence of More Creek and Iskut River

Geogr. co-ordinates:

Altitude (m a.s.l.): ± 415 m

Drainage area ($km^2$): 894 $km^2$

Full address where data available: Water Survey of Canada, Terrace, British Columbia

5. Meteorological station(s)

Name: Andrei Glacier base camp site

Geogr. location: Rock outcrop between Andrei Glacier and Forrest Kerr Glacier

Geogr. co-ordinates: 56° 55' 10" N, 130° 54' 30" W

Altitude (m a.s.l.): 1100 m

Full address where data available: B.C. Hydro, Hydroelectric Generation Projects Division, Vancouver, British Columbia

6. Remarks
Project terminated for meteorological station

7. Data sheet compiled by
O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



Leave blank

WORLD GLACIER MONITORING SERVICE

**HYDROMETEOROLOGICAL DATA 1980-85**

Leave blank

1. Country or territory: CD
2. Glacier number: 2605
3. Glacier name: ZAVISHA
4. Streamflow gaging station(s)

   Name: Stream not gauged

   Geogr. location:

   Geogr. co-ordinates:

   Altitude (m a.s.l.):

   Drainage area ($km^2$):

   Full address where data available:

5. Meteorological station(s)

   Name: Bridge Glacier

   Geogr. location: Periglacial zone of Bridge and Zavisha glaciers

   Geogr. co-ordinates: 50° 51' 15" N, 123° 26' 00" W

   Altitude (m a.s.l.): 1360 m

   Full address where data available: B.C. Hydro, Hydrology Department, Burnaby, British Columbia

6. Remarks

   Data provided from Data Collection Platform (DCP)

7. Data sheet compiled by

   O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada



| Leave blank | | | |
|---|---|---|---|

## 8.0: SPECIAL EVENTS

Reports on special glacier events in Canada depend very much on individuals just happening to be in the right place at the right time. The events listed in this section, therefore, are just a portion of the number of events that likely took place. The glacierized areas of Canada, unlike those of Europe, are sparsely populated so not only are few events observed but the impacts tend to affect resources, e.g. forest and fish, rather than people and structures.

No attempt has been made to collect information on events prior to 1980. Consideration should be given to doing this so that a clearer record of this aspect of Canada's glaciers be established. Gardner (1971) has documented some of the known events from the Rockies and there are a number of accounts in the published literature.

WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

Leave blank

1. Country or territory CD
2. Glacier number 0315
3. Glacier name CATHEDRAL
4. Type of event 3
5. Short description

This is an irregularly recurring event involving discharge of water from a supra-glacial lake. The lake occupies a depression in the upper region of Cathedral Glacier. In this region, local winds, through snow drift action, have created an immense snow ridge which b ounds the downside of the depression and impedes normal drainage. Catastrophic discharges, either subglacial or intraglacial, have initiated significant debris events as the discharge flows downslope through unconsolidated glacial till towards the valley-bottom railway lines, highway (Trans-Canada) and other structures. Significant events occurred in 1973, 1982 and 1984, though the complete sequence of any individual event has not been observed directly. Preliminary hydrologic and qeophysical surveys have been conducted including dye tracing, echo sounding, determination of the firn/ice transition (via drilling) and discharge tunnel exit measurements.

Closing of the main East-West railway link through Kicking Horse Pass and the Trans-Canada Highway, as a result of this debris flow, has a major economic impact particularly on British Columbia and the Prairies.

6. Reference or most important data source G. Holdsworth - NHRI internal reports.

Jackson, L.E., Jr., 1979. Canadian Geotechnical Journal, 16(4), 806-813

Jackson, L.E., Jr., 1980. Geological Survey of Canada Paper 80-1B, 292-294

7. Remarks

Supraglacial lake is oeriodically drained. Accessibility is limited to helicopters and hampered by bad weather.

8. Data sheet compiled by

M. Demuth, National Hydrology Research Institute, Saskatoon, S7N 3H5



Leave blank

WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

Leave blank

1. Country or territory CD
2. Glacier number
3. Glacier name CUMBERLAND
4. Type of event 03

5. Short description

On July 19, 1983, at about 0200 hrs, the moraine that impounded a proglacial lake in front of Cumberland Glacier was breached and in less than 5 hours almost the entire lake had emptied into the valley below. The overtopping of the moraine is believed to have been caused by wave action initiated by calving of the ice front. The lake was lowered by 38.4 m with a loss of $6.5 \times 10^6 m^3$ of water. The moraine breach had a volume of $1.2 \times 10^6 m^3$. A large fan of coarse sediment was deposited immediately downstream from the moraine and buried a former boggy meadow. A wall of water, up to 6-m high in the gorges, treed many slopes and piled the logs on the river bends. Floodwater substantially eroded incompetent material (glacial deposits, colluvium, alluvium) that it encountered.

Two Water Survey of Canada gauging stations closest to the Nostetuko River were damaged. Flood hydrographs from gauging stations that remained operational further down Homathko River, at Tragedy Canyon and at the mouth near Bute Inlet, showed that the flood lasted about 5 hours. The flow in Tragedy Canyon increased from 330 to 900 $m^3 s^{-1}$ within an hour.

6. Reference or most important data source Blown, A. and Church, M., 1985. Catastrophic lake drainage within the Homathko River basin, British Columbia. Canadian Geotechnical Journal, 22(4), November, 551-563

7. Remarks O. Mokievsky-Zubok, 1984. Glaciological studies in Homathko River basin. Internal report, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 18 pp.

8. Data sheet compiled by

J.J. Clague, Geological Survey of Canada and O. Mokievsky-Zubok, NHRI, Environment Canada



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

Leave blank

1. Country or territory CD
2. Glacier number
3. Glacier name FLOOD
4. Type of event 03
5. Short description

Ice-dammed Flood Lake (57°10'N; 131°54'W) flash-floods periodically into the Stikine River, B.C. The lake is approximately 4 km long and 1 km wide. The difference in height between the lowest level of remaining water and the high water mark is approximately 112 m. The estimated volume of Flood Lake was 220 x $10^6 m^3$ in 1979. Sudden discharges raise the water level in the Stikine River by up to 2 m. The maximum peak discharge is estimated at 3000 $m^3 s^{-1}$.

The sequence of discharges observed to date are:-

1980 - discharged half capacity in second half of August

1981 - full discharge, August 13 and 14

1982 - discharged in two stages, second half of August

1983 - discharged 90% of lake volume, August 19

1984 - total discharge, July 25

1985 - not monitored -- PROJECT TERMINATED

6. Reference or most important data source Mokievsky-Zubok, O., 1980. Sudden discharge of glacier-dammed Flood Lake// Mokievsky-Zubok, O., 1980-1985. Glaciological studies in Iskut River basin. NHRI reports// Waldron, D.A., 1981. Model simulation of the sudden discharge of glacier-dammed Flood Lake, August 1979. UBC report

7. Remarks

Full references are contained in the attached bibliography

8. Data sheet compiled by

O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada.



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WORLD GLACIER MONITORING SERVICE

**SPECIAL EVENTS 1980-85**

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1. Country or territory: CD

2. Glacier number:

3. Glacier name: FORREST KERR

4. Type of event: 03

5. Short description

A small ice-dammed lake (100 m x 100 m) on the right frontal margin of Forrest Kerr Glacier discharged in July 1981 and in 1983. No volume estimates were made.

6. Reference or most important data source Water Survey of Canada, Terrace, B.C. and O. Mokievsky-Zubok, 1980-1984. Glaciological studies in the Iskut River basin. (references in attached bibliography)

7. Remarks

8. Data sheet compiled by

O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada.



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory CD
2. Glacier number 0698
3. Glacier name FYLES
4. Type of event 3
5. Short description

The Fyles Glacier has a lobate terminus which presently blocks a valley into which it enters. Ape Lake (247 $km^2$, 85.5 x $10^6 m^3$) has been dammed up against the terminus of the lake for many centuries. However, since the turn of the century, the ice terminus has been thinning and retreating. Thinning is probably the primary cause of a jökulhlaup which drained 45.8 x $10^6 m^3$ of Ape Lake on October 20, 1984. A tunnel was developed under the distal edge of the glacier snout allowing sudden drainage to the level of a climax morainal sill which bisects the lake. This sill, however, gave way allowing a second surge of water to escape under the tunnelled glacier later on the same day bringing the drawdown to 20 m for the larger east basin of the lake and about 37 m for a smaller basin at the glacier terminus. Neither basin was completely drained. The resultant flood, with peak discharge of 1000-1800 $m^3 s^{-1}$ (magnitude varies as to position downstream and the method of calculation), washed out 50 km of flood plain before entering South Bentinck Arm (a fjord) on the central B.C. coast. There were heavy forestry and salmon fishing losses as well as washed out roads, bridges and ocean navi-

(continued on next sheet...)

6. Reference or most important data source Jones, D.P. et al., 1985. Geological Survey of Canada Open File Report No.1139, 107 pp. Also articles by Ricker et al. Canadian Alpine Journal, 1985 and 1986

7. Remarks

see continuation sheet...

8. Data sheet compiled by

Karl Ricker



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory: CD
2. Glacier number: 0698
3. Glacier name: FYLES
4. Type of event: 3
5. Short description

continuation from previous sheet ...

reached full level again on August 2, 1985. Ironically, on August 2, 1986 the lake drained again with a yet higher peak discharge, once again bringing about the same sort of damage downstream. However, the ocean navigation problems were not nearly so severe.

The cycle of jökulhlaups is expected to continue if the tunnel reseals during the winter of 1986/87. However, if glacier recession continues, the magnitude of the event is expected to be reduced with only incomplete refilling of the lake. The sedimentology of the lake is currently under study.

6. Reference or most important data source: see previous sheet.

7. Remarks

8. Data sheet compiled by

Karl Ricker



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory: CD
2. Glacier number: 1260
3. Glacier name: LOWELL
4. Type of event: 1
5. Short description

Surge commenced in April 1983 (or earlier). The advance rate reached a maximum of about 14 $m.d^{-1}$ and declined exponentially until May-June 1984. At this time the total advance was 2000 m. The lake, or widening of the Alsek River, was full of icebergs but the actual ice front was still more than 1200 m from the bluff of Goatherd Mountain, where it would have closed the river off completely. Metric photography was obtained from two stations at the ends of a baseline on Goatherd Mountain in September 1984.

Maps of Lowell Glacier prepared from satellite images (Landsat 1, 2, 3) are available (1973-1983).

6. Reference or most important data source: NHRI internal files. Article to appear in USGS Satellite Image Atlas of Glaciers

7. Remarks

Photographic and some narrative coverage in National Geographic (Lee, 1985).

8. Data sheet compiled by

G. Holdsworth, National Hydrology Research Institute, Saskatoon, S7N 3H5



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory CD
2. Glacier number 1345
3. Glacier name MILNE
4. Type of event 01
5. Short description

Between 1966 and 1983, Milne Glacier advanced 4.25 km at a mean annual rate of 250 $ma^{-1}$. The maximum rate of advance might have been greater than 2 $kma^{-1}$. Moraines on the glacier suggest at least three (3) previous surges. The periodicity is unknown but is likely to be high, i.e. infrequent.

6. Reference or most important data source Jeffries, M.O., 1984. Milne Glacier, northern Ellesmere Island, N.W.T., Canada: a surging glacier? Journal of Glaciology, 30(105), 251-253

7. Remarks

8. Data sheet compiled by Martin O. Jeffries, Geophysical Institute, University of Alaska, Fairbanks, Alaska 99775-0800



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory CD
2. Glacier number
3. Glacier name NATAVAS
4. Type of event 03
5. Short description

The ice-dammed Natavas Lake (57°04'N; 130°49'40"W) discharged suddenly on July 2 and 3, 1980, with a peak discharge of approximately 173 $m^3s^{-1}$. The maximum peak discharge previously recorded was 215 $m^3s^{-1}$.

6. Reference or most important data source Water Survey of Canada, Terrace, B.C. (08CG005)

O. Mokievsky-Zubok, 1982. Glaciological studies in Iskut River basin in 1981: annual report. Internal report, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 25 pp.

7. Remarks

8. Data sheet compiled by

O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada.



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WORLD GLACIER MONITORING SERVICE

**SPECIAL EVENTS 1980-85**

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1. Country or territory: CD
2. Glacier number: 1640
3. Glacier name: PEYTO
4. Type of event: 3
5. Short description

Two flood waves from the terminus of Peyto Glacier occurred as a result of very high precipitation in early July 1983 and a landslide which exposed a large section of ice-cored moraine. The flood waves induced erosion, and subsequent melt of the moraine and deposited an estimated 6000 $m^3$ of gravel in the valley. The majority of the deposition occurred in an area approximately 200 m x 20 m to depths of 3 m at the site of the National Hydrology Research Institute gauging station, 1 km from the glacier terminus. The initial flood washed away most of the equipment from the site and the gravel deposition totally destroyed the rest of the installation. These events appear to have been unique in the period for which hydrological records have been maintained for Peyto Creek. The instantanious discharge for this event is thought to have been in the order of 200-300 $m^3s^{-1}$. Regular maximum flows are of the order of 26 $m^3s^{-1}$.

6. Reference or most important data source: Johnson, P.G. and Power, J.M., 1985. Flood and landslide events, Peyto Glacier terminus, Alberta, Canada, 11-14 July 1983. Journal of Glaciology, 31(108), 86-91

7. Remarks

Description is taken from the abstract in the above article.

8. Data sheet compiled by

C.S.L. Ommanney



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WORLD GLACIER MONITORING SERVICE

# SPECIAL EVENTS 1980-85

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1. Country or territory CD

2. Glacier number 1785

3. Glacier name QUEEN MARY WEST

4. Type of event 1

5. Short description

In June, 1981, a prominent bulge was seen at the junction of one of the glaciers flowing off the western flanks of Mt. Queen Mary and the Hubbard Glacier. By 1983 this bulge had erupted and the glacier was in a surge mode having apparently over-ridden and/or displaced Hubbard Glacier ice.

In 1985, the glacier was still very broken up. This did not extend very far into Hubbard Glacier.

6. Reference or most important data source Photographic

7. Remarks

Photography and satellite images will be analysed.

8. Data sheet compiled by

G. Holdsworth.



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory CD
2. Glacier number 2320
3. Glacier name WARD HUNT ICE SHELF
4. Type of event 02
5. Short description

Since 1980 two sections of shelf ice, totalling 75 to 80 $km^2$ ($\sim$3.6 $km^3$), broke away from the front of the Ward Hunt Ice Shelf forming a number of ice islands, the largest of which was 36 $km^2$.

6. Reference or most important data source Jeffries, M.O. and Serson, H., 1983. Recent changes at the front of Ward Hunt Ice Shelf, Ellesmere Island, N.W.T. Arctic, 36(3), September, 289-290.

7. Remarks Stratigraphic studies being made to determine the strength, age and source of the ice. Satellite tracking of ice island drift.

8. Data sheet compiled by
H. Serson



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WORLD GLACIER MONITORING SERVICE
**SPECIAL EVENTS 1980-85**

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1. Country or territory CD
2. Glacier number
3. Glacier name UNNAMED
4. Type of event 03
5. Short description

A small, ice-dammed lake on the highest western tributary of Nostetuko River (National Topographic Series map 92N) drains periodically, at about 2-year intervals, flooding the Nostetuko and Homathko river valleys. The volume of the lake is about $0.5 \times 10^6 m^3$.

6. Reference or most important data source Blown, A. and Church, M., 1985. Catastrophic lake drainage within the Homathko River basin, British Columbia. Canadian Geotechnical Journal, 22(4), November, 551-563

O. Mokievsky-Zubok, 1981-1985. Glaciological studies in Homathko River basin.

7. Remarks

The annual reports by Mokievsky-Zubok are listed in the bibliography

8. Data sheet compiled by

O. Mokievsky-Zubok, National Hydrology Research Institute, Environment Canada.



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## 9.0: BIBLIOGRAPHY/REFERENCES

Every year reports on recent glacier studies in Canada are published in the Canadian Geophysical Bulletin and in ICE, the News Bulletin of the International Glaciological Society. The former includes a selected bibliography.

The references which follow are to those reports and publications on glacier studies in Canada published between 1980 and 1985, supplemented with some from 1979 and 1986 to which reference is made in the data sheets: For 1980 this means some duplication with those provided in the IVth PSFG report. Information on material published after 1985 is available from C.S.L. Ommanney and will be included in the next WGMS report. Not all the references have been seen and verified. Some of those that have not may have missing information identified by asterisks (***) or question marks.

The Surface Water Division maintains a list of some historical background and bibliographic files on Canadian glaciers and will provide detailed information on request.

ADAMS, W.P., 1984. McGill's Axel Heiberg station: 25 years of High Arctic research/La station de l'île Axel Heiberg: 25 ans de recherches sur le Haut-Arctique. Northline/Point Nord, 4(4), October/octobre, 3

ADAMS, W.P., 1985a. Research station on Axel Heiberg Island, Northwest Territories, Canada. Polar Record, 22(139), January, 431-433

ADAMS, W.P., 1985b. 25 years of research on Axel Heiberg Island. The Operational Geographer, No.6, 45-46

ADAMS, W.P. and OMMANNEY, C.S.L., 1981. Obituary - Fritz Müller 1926-1980. Arctic, 34(2), June, 195-198

ALASKA GEOGRAPHIC SOCIETY, 1982. Alaska's glaciers. Alaska Geographic, 9(1), 144 pp.

ALLEY, N.F., 1980. Holocene and latest Pleistocene cirque glaciations in the Shuswap Highland, British Columbia: discussion. Canadian Journal of Earth Sciences, 17(6), June, 797-798

ALT, B.T., 1980. Synoptic climate factors governing extreme mass balance seasons on Queen Elizabeth Island glaciers: (1960-1978). Implications for paleoclimatic studies. Final report, Contract No.OSQ77-00239, Polar Continental Shelf Project, Energy, Mines and Resources Canada, Ottawa, Ontario, 500 pp.

ALT, B.T., 1981. Synoptics of extreme mass balance conditions in the Queen Elizabeth Islands. Part I: Negative mass balance extremes; Part II: Positive mass balance extremes. Polar Continental Shelf Project, Energy, Mines and Resources Canada, Ottawa, Ontario, 20 pp. + 26 pp.

ALT, B.T., 1983. Synoptic analogs: a technique for studying climatic change in the Canadian High Arctic. In - Climatic Change in Canada 3, C.R. Harington (Editor), Syllogeus No.49, National Museum of Natural Science, National Museums of Canada, Ottawa, Ontario, 70-107

ALT, B.T., 1985. 1550-1620: a period of summer accumulation in the Queen Elizabeth Islands. In - Climatic change in Canada 5: critical periods in the Quaternary climatic history of northern North America, C.R. Harington (Editor), Syllogeus No.55, National Museum of Natural Sciences, National Museums of Canada, Ottawa, Ontario, 461-479

ALT, B.T., KOERNER,, R.M., FISHER, S.A. and BOURGEOIS, J.C., 1985. Arctic climate during the Franklin era, as deduced from ice cores. In - The Franklin Era in Canadian Arctic History, 1845-1859, P.D. Sutherland (Editor), Mercury Series, Archaeological Survey of Canada Paper No.131, National Museum on Man, Ottawa, Ontario, 69-92

AMBACH, W., 1980. Zur Kontamination von Firnschichten durch radioaktiven Fallout. Polarforschung, 50(1-2), 17-22

AMBACH, W. and MÜLLER, F., 1980. Determination of net accumulations from gross beta activity measurements in the North Water region. Polarforschung, 50(1-2), 1-7

ANDREWS, J.T., 1981. Holocene glacier variations in the eastern Canadian Arctic: a review. In - Holocene Glaciers, W. Karlén (Editor), Striae 18, Societas Upsaliensis Pro Geologia Quaternaria, Uppsala, 9-14

ARCTIC INSTITUTE OF NORTH AMERICA, 1980a. Field station reports - glaciological studies, Trapridge Glacier. Information North, Arctic Institute of North America, Calgary, Alberta, Autumn, 5

ARCTIC INSTITUTE OF NORTH AMERICA, 1980b. Mount Logan ice core project. Information North, Arctic Institute of North America, Calgary, Alberta, Winter, 5-6

ARCTIC INSTITUTE OF NORTH AMERICA, 1984. Kluane Lake research station. Annual Report 1984, Arctic Institute of North America, Calgary, Alberta, 7-9

ARMSTRONG, R.L., 1982. Book reviews - The Physics of Glaciers. By W.S.B. Paterson. Second Edition. Oxford, New York, Toronto, Sydney, Paris, Frankfurt: Pergamon Press, 1981. vii + 380 pp. Flexicover £7.25 ($17.50), hardcover £20.00 ($48.00). Arctic and Alpine Research, 14(2), May, 176

ARNOLD, K.C., 1982. Ice ablation measured by stakes and terrestrial photogrammetry - a comparison on the lower part of the White Glacier: Axel Heiberg Island, Canadian Arctic Archipelago. Axel Heiberg Island Research Reports, Glaciology No.2, McGill University, Montreal, Quebec, and NHRI Paper No.19, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 98 pp. + maps.

BAILEY, R.H., 1982. Planet Earth: Glacier. Time-Life Books, Alexandria, Virginia, 176 pp.

BAKER, R.W., 1981. Textural and crystal-fabric anisotropies and the flow of ice masses. Science, 211(4486), 6 March, 1043-1044

BAKER, R.W., 1982. A flow equation for anisotropic ice. Cold Regions Science and Technology, 6(2), November, 141-148

BALLANTYNE, C.K. and McCANN, S.B., 1980. Short-lived damming of a High-Arctic ice-marginal stream, Ellesmere Island, N.W.T., Canada. Journal of Glaciology, 25(93), 487-491

BARRIE, L.A., FISHER, D. and KOERNER, R.M., 1985. Twentieth century trends in Arctic air pollution revealed by conductivity and acidity observations in snow and ice in the Canadian High Arctic. In - Arctic Air Chemistry, Proceedings of the Third Symposium, 7-9 May 1984, Downsview, Ontario, K.A. Rahn (Editor), Atmospheric Environment, 19(12), 2055-2063

BARSCH, D. und KING, L. (Herausgeber/Editors), 1981. Ergebnisse der Heidelberg-Ellesmere Island-Expedition/Results of the Heidelberg Ellesmere Island Expedition. Heidelberger Geographische Arbeiten, Heft 69, 573 pp.

BARSCH, D., KING, L. and MÄUSBACHER, R., 1981. Glaziologische Beobachtungen an der Stirn des Webber-Gletschers, Borup-Fjord-Gebiet, N-Ellesmere Island, N.W.T., Kanada/Glaciological observations at the front of Webber Glacier, Borup Fiord area, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 269-284

BEAUDOIN, A.B., 1984. Holocene environmental change in the Sunwapta Pass area, Jasper National Park. Ph.D. thesis, Department of Geography, University of Western Ontario, London, Ontario, 487 pp.

BEDNARSKI, J., 1983. Glacier fluctuations and sea level history, Clements Markham Inlet, Ellesmere Island. Abstracts of the 12th Arctic Workshop, 16-18 March 1983, University of Massachusetts at Amherst, Contribution No.44, Department of Geology and Geography, University of Massachusetts, Amherst, 11-12

BEGET, J.E., 1981. Early Holocene glacier advance in the North Cascade Range, Washington. Geology (Boulder), 9(9), September, 409-413

BELEY, M.J., 1980. Glaciers, mountains probed to find Mt. Ogden moly. Canadian Mining Journal, 101(4), April, 55/57/61-62

BENOÎT, I., CHAMPOUX, A., OMMANNEY, S. et DUBOIS, J.-M.M., 1984. Clef pour la photo-interprétation des glaciers tempérés (le glacier Athabasca, Canada). Photo Interprétation, No.84-4, 29-32. Aussi - Rapport No.84-A-141, Département de géographie, Université de Sherbrooke, Sherbrooke, Québec

BENSON, C.S., 1984. Glacier-climate and oceans in Glacier Bay. In - A Century after Muir: the Scientific Adventure, J.D. Wood, Jr. (Editor), Proceedings of the First Glacier Bay Science Symposium, 23-26 September 1983, Gustavus, Alaska, abstract, 11

BERGSMA, B.M., SVOBODA, J. and FREEDMAN, B., 1983. Retreating glacier at Ellesmere Island N.W.T. releases an intact pre-Little Ice Age plant community. Abstracts of the 12th Arctic Workshop, 16-18 March 1983, University of Massachusetts at Amherst, Contribution No.44, Department of Geology and Geography, University of Massachusetts, Amherst, 14-15

BERGSMA, B.M., SVOBODA, J. and FREEDMAN, B., 1984. Entombed plant communities released by a retreating glacier at central Ellesmere Island, Canada. Arctic, 37(1), March, 49-52

BIGRAS, S.C., 1981. Hydrological investigation of glacial runoff components and their separation through hydrochemical analysis. M.A. thesis, Department of Geography, University of Ottawa, Ottawa, Ontario, January, 154 pp.

BINDA, G.G., 1984. Fluvioglacial sediment and hydrochemical dynamics, Peyto Glacier, Alberta. M.A. thesis, Department of Geography, University of Ottawa, Ottawa, Ontario, 139 pp.

BINDA, G.G., JOHNSON, P.G. and POWER, J.M., 1985. Glacier control of suspended-sediment and solute loads in a Rocky Mountain basin. Proceedings, Canadian Hydrology Symposium: 84, Water Quality Evolution within the Hydrological Cycle of Watersheds, 10-12 June 1984, Québec, Québec, 309-327

BIRD, J.B., 1980. The natural landscapes of Canada: a study in regional earth science. 2nd edition, Wiley & Sons, Toronto, Ontario, 260 pp.

BIRD, J.B., 1981. Obituaries: Fritz Müller (1926-1980). The Canadian Geographer, 25(4), Winter, 390

BIRKS, H.J.B., 1980. The present flora and vegetation of the moraines of the Klutlan Glacier, Yukon Territory, Canada: a study in plant succession. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 60-86. Also - Contribution No.202, Limnology Research Center, University of Minnesota

BLACHUT, S.P. and McCANN, S.B., 1981. The behaviour of a polar ice-dammed lake, Ellesmere Island, N.W.T., Canada. Arctic and Alpine Research, 13(1), February, 63-74

BLAKE, W., Jr, 1981. Neoglacial fluctuations of glaciers, southeastern Ellesmere Island, Canadian Arctic Archipelago. Geografiska Annaler, 63A(3-4), 201-218

BLAKE, W., Jr., 1984. Post-Hypsithermal advance of Leffert Glacier, Ellesmere Island, Arctic Canada. Program and Abstracts, 8th Biennial Meeting, American Quaternary Association, 13-15 August 1984, Boulder, Colorado, 14

BLATTER, H., 1985. On the thermal regime of Arctic glaciers: a study of the White Glacier, Axel Heiberg Island, and the Laika Glacier, Coburg Island, Canadian Arctic Archipelago. Zürcher Geographische Schriften, No.22, Geographisches Institut, Eidgenössische Technische Hochschule Zürich, Switzerland, also Glaciology No.6, Axel Heiberg Island Research Reports, 107 pp.

BLOWN, A. and CHURCH, M., 1985. Catastrophic lake drainage within the Homathko River basin, British Columbia. Canadian Geotechnical Journal, 22(4), November, 551-563

BOURGEOIS, J.C. et GUERTS, M.-A., 1983. Palynologie et morphogenèse récente dans le bassin du Grizzly Creek (Territoire du Yukon). Journal canadien des sciences de la terre, 20(10), octobre, 1543-1553

BOURGEOIS, J.C., KOERNER, R.M. and ALT, B.T., 1985. Airborne pollen: a unique mass tracer, its influx to the Canadian High Arctic. Proceedings of the Symposium on Snow and Ice Chemistry and the Atmosphere, 19-24 August 1984, Peterborough, Ontario, Annals of Glaciology, Volume 7, 109-116

BOVIS, M.J., DAGG, B. and KAYE, D., 1985. Debris flows and debris torrents in the southern Canadian Cordillera: discussion. Canadian Geotechnical Journal, 22(4), November, 608

BRADLEY, R.S., 1983. Arctic precipitation-temperature relationships and the interpretation of ice core isotopic records. Abstracts of the 12th Arctic Workshop, 16-18 March 1983, University of Massachusetts at Amherst, Contribution No.44, Department of Geology and Geography, University of Massachusetts, Amherst, 16

BRADLEY, R.S. and SERREZE, M., 1985a. Glacio-climatic studies of a High Arctic plateau ice cap. Part 1: Mass balance. In - Glacial Geologic and Glacio-Climatic Studies in the Canadian High Arctic, R.S. Bradley (Editor), Contribution No.49, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 107-127

BRADLEY, R.S. and SERREZE, M., 1985b. Glacio-climatic studies of a High Arctic plateau ice cap. Part 2: Topoclimate. In - Glacial Geologic and Glacio-Climatic Studies in the Canadian High Arctic, R.S. Bradley (Editor), Contribution No.49, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 128-166

BRAITHWAITE, R.J., 1981. On glacier energy balance, ablation, and air temperature. Journal of Glaciology, 27(97), 381-391

BRANSON, D., 1984. Magnitude and characteristics of ablation on four Torngat glaciers. B.A. honours thesis, Department of Geography, Memorial University of Newfoundland, St. John's, Newfoundland, ** pp.

BRASSEUR, W.C., 1981. Glacier snatches moose. Park News, the Journal of the National and Provincial Parks Association of Canada, 17(3), Fall, 22

BUDD, W.F., 1981. The importance of ice sheets in long term changes of climate and sea level. IAHS Publication No.131, Sea level, ice and climatic change, I. Allison (Editor), International Association of Hydrological Sciences, 441-471

BUTLER, D., LYONS, W.B., HASSINGER, J. and MAYEWSKI, P.A., 1980. Shallow core snow chemistry of Athabasca Glacier, Alberta. Canadian Journal of Earth Sciences, 17(2), February, 278-281

CALGARY HERALD, 1984. Glacial lake linked to years of slides. Calgary Herald, Calgary, Alberta, Thursday, 30 August, A1-A2

CAMPBELL, R.B. and RAMPTON, V.N., 1980. The story of the rocks and glaciers. In - Kluane: Pinnacle of the Yukon, J.B. Theberge (Editor), Doubleday Canada Ltd., Toronto, Ontario, 3-17

CANADA, BEDFORD INSTITUTE OF OCEANOGRAPHY, 1985. Arctic land-sea interaction: glaciers, sediment and sea level, northern Bay of Fundy, Nova Scotia. Bedford Institute of Oceanography, Dartmouth, Nova Scotia, 36 pp.

CANADA, ENVIRONMENT CANADA, 1981. Columbia Icefield. Map, Scale 1:50,000, produced by National Hydrology Research Institute, Inland Waters Directorate and Western Region, Parks, Canada, Department of the Environment and printed by Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa, Ontario

CANADA, ENVIRONMENT CANADA, 1982. The Canadian glacier inventory project. Internal report, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, September, 45 pp.

CANADA, ENVIRONNEMENT CANADA, 1980a. Le glacier Athabasca, Alberta - Canada, échelle 1:10,000, 10 août, 1979. Direction générale des eaux intérieures, Carte de glacier series n°8, feuille n°6, carte produite par la Direction générale des eaux intérieures, Environnement Canada 1980, imprimée par la Direction des levés et de la cartographie, Ministère de l'énergie, des mines et des ressources, Ottawa, Ontario

CANADA, ENVIRONNEMENT CANADA, 1980b. Le glacier Saskatchewan, Alberta - Canada, échelle 1:10,000, 9 et 11 août, 1979. Direction générale des eaux intérieures, Carte de glacier series n°8, feuille n°7, carte produite par la Direction générale des eaux intérieures, Environnement Canada 1980, imprimée par la Direction des levés et de la cartographie, Ministère de l'énergie, des mines et des ressources, Ottawa, Ontario

CANADA, ENVIRONNEMENT CANADA, 1981. Champ de glace Columbia. Carte, échelle 1:50,000, établie par Parcs Canada, Région ouest, et Division neige et glace, Institut national de recherche en hydrologie, Ministère de l'Environnement et imprimé par la Direction des lévés et de la cartographie, Ministère de l'Energie, des Mines et des Ressources, Ottawa, Ontario

CANADIAN RESEARCH, 1982. NHRI to relocate to Saskatoon in new $16M facility. Canadian Research, 15(4), July/August, 8/10

CAVELL, E., 1983. Legacy in ice: the Vaux family and the Canadian Alps. Peter and Catharine Whyte Foundation, Banff, Altitude Publishing, Banff, Alberta, 98 pp.

CHAMPOUX, A., 1984. Évolution des glaciers par photo-interprétation au Parc National des Glaciers (sic), British Columbia (Evolution of glaciers by air photointerpretation in the Glacier National Park). Programme et résumés, Stratigraphie et paléoenvironnements du Québec et des régions environnantes au Pléistocène et à l'Holocène, et 1er Symposium sur les climats holocènes et les tendances climatiques en Amérique du Nord et au Groënland, J.-M. Dubois, Q.H.J. Gwyn et M. Parent (éditeurs), V$^{e}$ Congrès, Association Québécoise pour l'Étude du Quaternaire, 4-7 October 1984, Sherbrooke, Québec, 23-24

CHAMPOUX, A., 1985. Répartition spatiale, évolution et caractéristiques des glaciers du parc national de Glacier, Colombie-Britannique. Thèse de M.Sc., Rapport 85-M-9, Département de géographie, Université de Sherbrooke, Sherbrooke, Québec, 74 pp.

CHAMPOUX, A. et OMMANNEY, C.S.L., 1985. Repartition spatiale, évolution et caractéristiques des glaciers du Parc National de Glacier, Colombie-Britannique. Rapport interne, Institut national de recherches en hydrologie, Direction générale des eaux intérieures, Environnement Canada, Ottawa, Ontario, septembre, 74 pp.

CHIZHOV, O.P., 1982. Rezul'taty analiza mnogoletnikh ryadov izmereniy balansa massy lednikov. (Results of interpretation of long-term rows of glacier mass-balance measurements). Materialy Gliatsiologicheskikh Issledovanii, Khronika, Obsuzhdeniia, Mezhduvedomstvennyi Geofizicheskii Komitet, Sektsiia Gliatsiologii, Institut Geografii, Academy Nauk SSSR/Data of Glaciological Studies, Chronicle, Discussion, Section of Glaciology of the Soviet Geophysical Committee and Institute of Geography, Academy of Sciences of the U.S.S.R., No.42, Moskva/Moscow, Iul'/July, in Russian 170-176, abstract in English 176-177

CHIZOV, O.P., 1983. Fizika lednikov: izdanie vtoroe (Book review: The Physics of Glaciers). Novye Knigi za Rubezhom, Seriya A, Matematika, Mekhanika, Astronomiya, Fizika, Geofizika, Khimiya, Geologiya, No.3, 56-58. Also - OOENV translation No.2333, Library, Environment Canada, Ottawa, Ontario, 5 pp.

CHORLTON, W., 1983. Planet Earth: Ice ages. Time-Life Books, Alexandria, Virginia, 176 pp.

CLAGUE, J.J., EVANS, S.G. and BLOWN, I.G., 1985. A debris flow triggered by the breaching of a moraine-dammed lake, Klattasine Creek, British Columbia. Canadian Journal of Earth Sciences, 22(10), October, 1492-1502

CLAGUE, J.[J.], JOZSA, L.A. and PARKER, M.L., 1982. Dendrochronological dating of glacier-dammed lakes: an example from Yukon Territory, Canada. Arctic and Alpine Research, 14(4), November, 301-310. Also - Geological Survey of Canada Paper No.83-4, Ottawa, Ontario, Abstract, 6

CLAGUE, J.J. and RAMPTON, V.N., 1982. Neoglacial Lake Alsek. Canadian Journal of Earth Sciences, 19(1), January, 94-117. Also - Geological Survey of Canada Paper No.83-4, Ottawa, Ontario, Abstract, 6-7

CLARKE, G.K.C., 1980. An estimate of the magnitude of outburst floods from lake Donjek, Yukon Territory, Canada. A report prepared for the Department of Indian and Northern Affairs through a contract from the Department of Supply and Services by the Department of Geophysics and Astronomy, University of British Columbia, Vancouver, British Columbia, 20 March, 90 pp.

CLARKE, G.K.C., 1981. Glacier beds: their relationship to ice dynamics, glacier hydrology and erosion. Progress report, Water Resources Research Support Program, Department of Geophysics and Astronomy, University of British Columbia, Vancouver, B.C., 16 December, unpaginated

CLARKE, G.K.C., 1982. Glacier outburst floods from "Hazard Lake", Yukon Territory, and the problem of flood magnitude prediction. Journal of Glaciology, 28(98), 3-21

CLARKE, G.K.C., 1983. Glacier surging. G.K.C. Clarke, University of British Columbia. Information North, Arctic Institute of North America, Winter, 5

CLARKE, G.K.C., 1985a. An interpretation model for the glacier in Mt. Wrangell Caldera. EOS, Transactions, American Geophysical Union, 66(46), 12 November, abstract, 899

CLARKE, G.K.C., 1985a. Trapridge Glacier studies 1969-85: inferences concerning the surge mechanism. Abstracts, Workshop on Hydraulic Effects at the Glacier Bed and Related Phenomena, 16-19 September 1985, Interlaken, Switzerland, VAW/ETH Zürich, Switzerland, 1 pp.

CLARKE, G.K.C. and COLLINS, S.G., 1984. The 1981-1982 surge of Hazard Glacier, Yukon Territory. Canadian Journal of Earth Sciences, 21(3), March, 297-304

CLARKE, G.K.C., COLLINS, S.G. and THOMPSON, D.E., 1984. Flow, thermal structure, and subglacial conditions of a surge-type glacier. Canadian Journal of Earth Sciences, 21(2), February, 232-240

CLARKE, G.K.C. and MATHEWS, W.H., 1981. Estimates of the magnitude of outburst floods from Lake Donjek, Yukon Territory, Canada. Canadian Journal of Earth Sciences, 18(9), September, 1452-1463

CLARKE, G.K.C., MATHEWS, W.H. and PACK, R.T., 1984. Outburst floods from Glacial Lake Missoula. Quaternary Research, 22(3), November, 289-299

CLARKE, G.K.C. and PATERSON, W.S.B., 1980. Correspondence - Multiple flow states for ice masses. Journal of Glaciology, 25(92), 355-356

CLARKE, G.K.C., THOMPSON, D.E. and COLLINS, S.G., 1981. The surge mechanism for Trapridge Glacier, Yukon Territory. Paper presented at biennial meeting, North East North America Branch, International Glaciological Society, 27 February - 1 March 1981, Château Montebello, Québec, Abstract, 1 pp.

CLARKE, G.K.C. and WALDRON, D.A., 1984. Simulation of the August 1979 sudden discharge of glacier-dammed Flood Lake, British Columbia. Canadian Journal of Earth Sciences, 21(4), April, 502-504

COHEN, P., 1981. Forecasting glacier runoff. Unpublished report on Project No.T421 prepared by the Computer and Applied Statistics Directorate for the Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 53 pp.

COHEN, P., MOKIEVSKY-ZUBOK, O. and FOGARASI, S., 1982. Assessment of the ARIMA model in forecasting runoff from Sentinel Glacier, B.C. Poster Session No.4, presented at Annual Meeting of the Canadian Association of Geographers, 9-12 June 1982, Ottawa University, Ottawa, Ontario, 18 pp.

COLLINS, D.N., 1982. Flow-routing of meltwater in an alpine glacier as indicated by dye tracer tests. Beitrage zur Geologie der Schweiz - Hydrologie, Bern, Band 28 II, 523-534

COLLINS, D.N., 1984. Water and mass balance measurements in glacierised drainage basins. Geografiska Annaler, 66A(3), 197-214

COLLINS, D.N. and POWER, J.M., 1985. Meltwater provenance, hydrological pathways and hydrochemical processes in an alpine glacierized basin. Proceedings, Canadian Hydrology Symposium 1984, Water Quality Evolution within the Hydrological Cycle of Watersheds, 10-12 June 1984, Québec, Québec, abstract, 307-308

COLLINS, D.N. and YOUNG, G.J., 1981a. Distinctive characteristics of meltwater hydrology and hydrochemistry in partially-glacierized catchments. EOS, Transactions, American Geophysical Union, 62(45), 10 November, Abstract, 806

COLLINS, D.N. and YOUNG, G.J., 1981b. Meltwater hydrology and hydrochemistry in snow- and ice-covered mountain catchments. Nordic Hydrology, 12(4-5), 319-334

COLLINS, S.G., 1980. Three surging glaciers, St. Elias Mountains, Canada. National Geographic Society Research Reports Vol.12, Washington, D.C., 103-115

CRUMP, J., 1983. Glacier on the move. The Globe and Mail, Toronto, Ontario, 22 October, Saturday, 8

DANSGAARD, W., CLAUSEN, H.B., GUNDESTRUP, N., HAMMER, C.U., JOHNSEN, S.F., KRISTINSDOTTIR, P.M. and REEH, N., 1982. A new Greenland deep ice core. Science, 218(4579), 24 December, 1273-1277

DAVIDSON-ARNOTT, R., NICKLING, W. and FAHEY, B.D. (Editors), 1982. Research in glacial, glacio-fluvial and glacio-lacustrine systems. Proceedings of 6th Guelph Symposium on Geomorphology, 1980. Geographical Publication No.6, Department of Geography, University of Guelph, Geo Books Norwich, Geo Abstracts, Norwich, 318 pp.

DAVIS, P.T., 1980. Late Holocene glacial, vegetational, climatic history of Pangnirtung and Kingnait Fiord area, Baffin Island, N.W.T., Canada. Ph.D. thesis, Department of **********, University of Colorado, Boulder, Colorado, 366 pp.

DAVIS, P.T., 1982. Late Holocene glacial history, Pangnirtung area, Baffin Island, Canada. Abstracts with Programs, Geological Society of America, 17th Annual Northeastern Section and 31st Annual Southeastern Section combined meetings, 25-27 March 1982, Washington D.C., 14( 1-2), February, 13

DAVIS, P.T., 1985. Neoglacial moraines on Baffin Island. In - Quaternary environments: eastern Canadian Arctic, Baffin Bay and West Greenland, J.T. Andrews (Editor), Allen and Unwin, London, U.K., October, 682-718

DELMAS, R.J., LEGRAND, M. and HOLDSWORTH, G., 1985. Snow chemistry on Mount Logan, Yukon Territory, Canada. Proceedings of the Symposium on Snow and Ice Chemistry and the Atmosphere, 19-24 August 1984, Peterborough, Ontario, Annals of Glaciology, Volume 7, abstract, 213

DOAKE, C.S.M. and WOLFF, E.W., 1985. Matters arising - Flow law for ice in polar ice sheets. Nature, 318(6041), 7 November, 83

DOWDESWELL, J.A., 1984. Late Quaternary chronology for the Watts Bay area, Frobisher Bay, southern Baffin Island, N.W.T., Canada. Arctic and Alpine Research, 16(3), August, 311-320

DOWNIE, B.K., 1980. Kluane, one of our most exciting national parks. Canadian Geographic, 100(2), April/May, 32-39

DREWRY, D.J., 1984. Ice sheets on the move. Geographical Magazine, 56(7), July, 356-361

DREYER, N.N., 1984. Taly snegovoy i lednikovy stok gor zapada Kanady i SSHA (Snow-melt and glacier-derived runoff in the mountains of western Canada and the USA). Materialy Glyatsiologicheskikh Issledovaniy/Data of Glaciological Studies, Khronika Obsuzhdeniya, Vol.50, Mezhduvedomstvenny Geofizicheskiy Komitet/Soviet Geophysical Committee, Pri Prezidiume Akademiya Nauk SSSR/Academy of Sciences of the U.S.S.R., Moskva/Moscow, 56-63

DREYER, N.N. and ANANICHEVA, M.D., 1983. Karta rechnogo stoka gor eapada Kanadi i SSHA. (Maps of the river run-off in the mountains of western Canada and the USA) Materialy Gliatsiologicheskikh Issledovanii, Khronika, Obsuzhdeniia, Mezhduvedomstvennyi Geofizicheskii Komitet, Sektsiia Gliatsiologii, Institut Geografii, Academy Nauk SSSR/Data of Glaciological Studies, Chronicle, Discussion, Section of Glaciology of the Soviet Geophysical Committee and Institute of Geography, Academy of Sciences of the U.S.S.R., No.46, Moskva/Moscow, Dekabr'/December, in Russian 105-109, abstract in English 109

DREYER, N.N. i KOTLYAKOV, V.M., 1980. Seor Materialov olia Atlasa Snezhno-Ledovykh Resursov mira v SSHA i Kanade. (Collecting data for the World Atlas of Snow and Ice Resources in the USA and Canada) Khronika Obsuzhdeniia, Vyp.37, Materialy Gliatsiologicheskikh Isledovanii, Institut Geografii, Akademiia Nauk SSSR, Moskva, D'ikabr', 107

DREYER, N.N., NIKOLAYEVA, G.M. and TSIGELNAYA, I.D., 1982. Maps of streamflow resources of some high-mountain areas in Asia and North America. In - Hydrological Aspects of Alpine and High Mountain Areas, J.W. Glen (Editor), Proceedings of the Exeter Symposium, 19-30 July 1982, IAHS Publication No.138, International Association of Hydrological Sciences, 11-20

DRISCOLL, F.G., Jr, 1980a Formation of the Neoglacial surge moraines of the Klutlan Glacier, Yukon Territory, Canada. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 19-30

DRISCOLL, F.G., Jr, 1980b Wastage of the Klutlan ice-cored moraines, Yukon Territory, Canada. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 31-49

DRISCOLL, F.G., Jr, 1983. Reply to comments by John Pickard regarding "Wastage of the Klutlan ice-cored moraines, Yukon Territory, Canada. Quaternary Research, 20(2), September, 251-251

DRISCOLL, F.G., Jr, 1984. Reply to comments by John Pickard regarding "Wastage of the Klutlan ice-cored moraines, Yukon Territory, Canada". Quaternary Research, 22(2), September, 260-261

DUFORD, J.M. and OSBORN, G.D., 1980. Holocene and latest Pleistocene cirque glaciations in the Shuswap Highland, British Columbia: reply. Canadian Journal of Earth Sciences, 17(6), June, 799-800

DÜRST, A., 1980. Professor Dr. Fritz Müller, 16. April 1926 - 26. Juli 1980. Geographica Helvetica, 35(3), 122

DYKE, A.S., ANDREWS, J.T. and MILLER, G.H., 1982. Quaternary geology of Cumberland Peninsula, Baffin Island, District of Franklin. Geological Survey of Canada Memoir No.403, Ottawa, Ontario, 32 pp. + maps

DZHONSON, P. i PAUER, Dzh., 1985. Rol' vysokikh pavodkov v lednikovykh basseynakh. Tezisy dokpadov, Balans Massy, Kolebaniya Lednikov i Lednikovy Stok, Mezhdunarodny Simpozium, 30 Sentyabrya - 5 Oktyabruya g., Alma-Ata, SSSR, Akademiya Nauk SSSR, Mezhduvedomstvenny Geofizicheskiy Komitet, Moskva, 37-38

ECHEVARRIA, E., 1983. Reviews - Columbia Icefield: a solitude of ice. Canadian Alpine Journal/Le journal alpin canadien, Volume 66, 55

EDLUND, S.A., 1985. Lichen-free zones as Neoglacial indicators on western Melville Island, District of Franklin. Project 760058. In - Scientific and Technical Notes, Current Research, Part A, Geological Survey of Canada Paper No.85-1A, 709-712

EISBACHER, G.H. and CLAGUE, J.J., 1984. Destructive mass movements in high mountains: hazard and management. Geological Survey of Canada Paper No.84-16, Ottawa, Ontario, 230 pp.

EMERY, J.J. and MIRZA, F.A., 1980. Finite element method simulation of large ice mass flow behaviour. In - Physics and Mechanics of Ice, P. Tryde (Editor), International Union of Theoretical and Applied Mechanics (IUTAM) Symposium Copenhagen, 6-10 August 1979, Technical University of Denmark, Springer-Verlag, Berlin, Heidelberg, 82-92

ENGLAND, J.H., 1982. The glacial geology of the Archer Fiord/Lady Franklin Bay area, northeastern Ellesmere Island, N.W.T., Canada. Ph.D. thesis, Department of *******, University of **********, ** pp.

ENGLAND, J., FISHER, D.A. and KOERNER, R.M., 1982. Reconciling glacial geology and the ice core record on northeast Ellesmere Island. Geological Society of America, Abstracts with Programs, 14(7), **********, 484

EYLES, N., SASSEVILLE, D.R., SLATT, R.M. and ROGERSON, R.J., 1982. Geochemical denudation rates and solute transport mechanisms in a maritime temperate glacier basin. Canadian Journal of Earth Sciences, 19(8), August, 1570-1581

FAIRLEY, B., 1983. Reviews - The Great Glacier and its House: the story of the first centre of alpinism in North America, 1885-1925. William Lowell Putnam. The American Alpine Club, New York, 1982, 166 duotone photographs, maps, 224 pp., $45. Canadian Alpine Journal/Le journal alpin canadien, Vol. 66, 56

FANGEL, H., 1982. Glacial ice employed as mine backfill. The Northern Miner, 68(6), 15 April, B28-B29

FIELD, W.O., Jr., 1984. Glacier termini photography since 1926. In - A Century after Muir: the Scientific Adventure, J.D. Wood, Jr. (Editor), Proceedings of the First Glacier Bay Science Symposium, 23-26 September 1983, Gustavus, Alaska, abstract, 12-13

FISHER, D., 1981. High Arctic Wisconsin ice sheet, thick or thin? Paper presented at biennial meeting, North East North America Branch, International Glaciological Society, 27 February - 1 March 1981, Château Montebello, Québec, Abstract, 1 pp.

FISHER, D.A., 1982. Carbon-14 compared to oxygen isotope records from Camp Century, Greenland and Devon Island, Canada. Climatic Change, 4(4), 419-426

FISHER, D.A. and ALT, B.T., 1985. A global oxygen isotope model - semi-empirical, zonally averaged. Proceedings of the Symposium on Snow and Ice Chemistry and the Atmosphere, 19-24 August 1984, Peterborough, Ontario, Annals of Glaciology, Volume 7, 117-124

FISHER, D.A. and KOERNER, R.M., 1980. Some aspects of climatic change in the High Arctic during the Holocene as deduced from ice cores. In - Quaternary Paleoclimate, W.C. Mahaney (Editor), Proceedings of Fourth Conference on Quaternary Research, 18-20 May 1979, Toronto, Ontario, Geo Abstracts, Norwich, U.K., 249-271

FISHER, D.A. and KOERNER, R.M., 1983. Ice-core study: a climatic link between the past, present and future. In - Climatic Change in Canada 3, C.R. Harington (Editor), Syllogeus No.49, National Museum of Natural Science, National Museums of Canada, Ottawa, Ontario, 50-69

FISHER, D.A., KOERNER, R.M., PATERSON, W.S.B., DANSGAARD, W., GUNDESTRUP, N. and REEH, N., 1983. Effect of wind scouring on climatic records from ice-core oxygen-isotope profiles. Nature, 301(5897), 20 January, 205-209

FISHER, D.A., REEH, N. and CLAUSEN, H.B., 1985. Stratigraphic noise in the time series derived from ice cores. Proceedings of the Symposium on Snow and Ice Chemistry and the Atmosphere, 19-24 August 1984, Peterborough, Ontario, Annals of Glaciology, Volume 7, 76-83

FISHER, D.A., REEH, N. and LANGLEY, K., 1985. Objective reconstructions of the Late Wisconsinan Laurentide ice sheet. Géographie Physique et Quaternaire, 39(3), 229-238

FLÜGEL, W.-A., 1981. Hydrologische Studien zum Wasserhaushalt hocharktischer Einzugsgebiete im Bereich des Oobloyah-Tals, N-Ellesmere Island, N.W.T., Kanada/Hydrological investigations on the water balance of High Arctic catchment areas in the Oobloyah Valley, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 311-382

FOGARASI, S., 1980. A preliminary computer program to calculate snow surface albedo changes over Sentinel Glacier, B.C. Unpublished progress report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, February, 30 pp.

FOGARASI, S., 1981. Albedo survey on Andrei Glacier, Iskut River basin, B.C., midsummer, 1980. NHRI Paper No.15, National Hydrology Research Institute, Inland Waters Directorate, Environment Canada, Ottawa, Ontario, 13 pp.

FOGARASI, S., 1982. Albedo survey and simulation for Andrei Glacier, B.C., mid-summer, 1980. Atmosphere-Ocean, 16th Annual Congress, Canadian Meteorological and Oceanographic Society, 26-28 May 1982, University of Ottawa/16e congrès annuel, La Société Canadienne de Météorologie et d'Océanographie, 26-28 mai 1982, Université d'Ottawa, Ottawa, Ontario, Abstract/résumé, 43

FORD, D.C., 1981. Geology, geomorphology, and glaciology of the Castleguard-Columbia Icefield area. Proceedings of the Eighth International Congress of Speleology, B.F. Beck (Editor), 18-24 July 1981, Bowling Green, Kentucky, U.S.A., Abstract, 37

FORD, D.C., 1983. The physiography of the Castleguard karst and Columbia Icefields area, Alberta, Canada. In - Castleguard Cave and karst, Columbia Icefields area, Rocky Mountains of Canada: a symposium, D.C. Ford (Editor), Arctic and Alpine Research, 15(4), November, 427-436

FORD, D.C. and SMART, C.C., 1982. Observations on glacial and subglacial drainage conditions in the vicinity of Castleguard Mountain, Columbia Icefield, Canada. In - Research in Glacial, Glacio-fluvial and Glacio-lacustrine systems, Proceedings of 6th Guelph Symposium on Geomorphology, 9-10 May 1980, R. Davidson-Arnott, W. Nickling and B.D. Fahey, (Editors), Geographical Publication No.6, Department of Geography, University of Guelph, Geo Books Norwich, Geo Abstracts, Norwich, Abstract, 318

FORD, D.C., SMART, P.L. and EWERS, R.O., 1983. The physiography and speleogenesis of the Castleguard Cave, Columbia Icefields, Alberta, Canada. In - Castleguard Cave and karst, Columbia Icefields area, Rocky Mountains of Canada: a symposium, D.C. Ford (Editor), Arctic and Alpine Research, 15(4), November, 437-450

FOUNTAIN, A.G. and TANGBORN, W., 1985. Overview of contemporary techniques. Techniques for prediction of runoff from glacierized areas, G.J. Young (Editor), IAHS Publication No.149, International Association of Hydrological Sciences, 27-41

FREEMAN, R., 1985. The 1927 Ostheimer Expedition to the Clemenceau Icefield. Canoma, 11(1), July, 38-40

GARDNER, J.S., 1980. Dendrochronological evidence for flood/debris-flow frequency in the Canadian Rockies. Résumés des communications/Abstracts of papers, A. Ek-Troisfontaines (Editor), Canadian Association of Geographers Annual Meeting/l'Association Canadienne des Géographes Réunion annuelle, May 26-2é mai, 1980, Université du Québec à Montréal, Québec, 13

GARDNER, J.S., 1981. Natural hazards in a mountain environment: the Bow Valley region, Alberta. Manuscript report, Kananaskis Centre for Environmental Research, University of Calgary, Calgary, Alberta, 41 pp.

GARDNER, J.S. and JONES, N.K., 1985. Evidence for a Neoglacial advance of the Boundary Glacier, Banff National Park, Alberta. Canadian Journal of Earth Sciences, 22(11), November, 1753-1755

GILBERT, R., 1982. Contemporary sedimentary environments on Baffin Island, N.W.T., Canada: glaciomarine processes in fiords of eastern Cumberland Peninsula. Arctic and Alpine Research, 14(1), February, 1-12

GILBERT, R., 1983. Book reviews - Research in glacial, glaciofluvial and glaciolacustrine systems: proceedings of the 6th Guelph Symosium in Geomorphology, 1980. Edited by R. Davidson-Arnott, W. Nickling, and B.D. Fahey. (Department of Geography, University of Guelph, Geographical Publication No.6.) Norwich: Geo Books in association with Geomorphology Symposium, University of Guelph, 1982. Arctic and Alpine Research, 15(2), May, 275

GILBERT, R. and SHAW, J., 1981. Sedimentation in proglacial Sunwapta Lake, Alberta. Canadian Journal of Earth Sciences, 18(1), January, 81-93

GILBERT, R., SYVITSKI, J.P.M. and TAYLOR, R.B., 1985. Reconnaissance study of proglacial Stewart Lakes, Baffin Island, District of Franklin. Project 810042. In - Current Research, Part A, Geological Survey of Canada Paper No.85-1A, 505-510

GOLD, L.W., 1981. Symposium on processes of glacier erosion and sedimentation: opening remarks. Annals of Glaciology, Vol.2, Proceedings of the Symposium on Processes of Glacier Erosion and Sedimentation, Geilo, Norway, 25-30 August 1980, 1

GOLDRING, P., 1985. Geographical names of Auyuittuq National Park Reserve. Canoma, 11(1), July, 28-32

GOODERHAM, M., 1985. Pollution blamed for acidic icefields in Canadian Arctic. The Globe and Mail, Toronto, Ontario, Friday, 1 February, 10

GOODRICH, D.C., 1982. A simple 35-mm SLR photogrammetric system for glacier measurements. Photogrammetric Engineering and Remote Sensing, 48(9), September, 1477-1485

GOODWIN, R.G., 1982. Neoglacial lacustrine sedimentation and ice advance, Glacier Bay, Alaska. Ph.D. thesis, Department of **********, Ohio State University, Columbus, Ohio, 272 pp.

GOTTLIEB, L., 1980a. Development and applications of a runoff model for snowcovered and glacierized basins. Nordic Hydrology, 11(5), 255-272

GOTTLIEB, L., 1980b. A general runoff model for snowcovered and glacierized basins. Paper presented at Sixth Nordic Hydrological Conference, 10-16 August 1980, Vemdalen, Sweden, 17 pp. Rapport No.52, Naturgeografiska Institutionen, Uppsala Universitet, 35-51.

GROVES, G.A.N. and LIVERMAN, D., 1980. The draining of an ice dammed lake. The Canadian Alpine Journal, 63, 65-66

HAEBERLI, W. (Editor), 1985. Fluctuations of glaciers 1975-1980 (Vol.IV). A contribution to the International Hydrological Programme. Report compiled for the Permanent Service on the Fluctuations of Glaciers of the IUGG - FAGS/ICSU, International Commission on Snow and Ice of the International Association of Hydrological Sciences and UNESCO, Paris, 265 pp. + maps

HALLET, B. and ANDERSON, R.S., 1980. Detailed glacial geomorphology of a proglacial bedrock area at Castleguard Glacier, Alberta, Canada. Zeitschrift für Gletscherkunde und Glazialgeologie, 16(2), 171-184

HAMMER, K.M. and SMITH, N.D., 1983. Sediment production and transport in a proglacial stream: Hilda Glacier, Alberta, Canada. Boreas, 12(2), 91-106

HAMPER, M.J. and SMITH, N.D., 1983. Suspended sediment transport in glacier-fed Lake Louise, Alberta, Canada. Abstracts with Programs, Geological Society of America, 17th Annual Meeting, North-central Section, 28-29 April 1983, Madison, Wisconsin, 15(4), March, 227

HARDING, K.A., 1985. Glacier inventory of the Premier Range, British Columbia. B.Sc. thesis, Department of Geography, University of Western Ontario, London, Ontario, 101 pp.

HARDSTAFF, L., 1981. Glacier snout suddenly slows. Revelstoke Herald, Wednesday, 14 October

HARDY ASSOCIATES LIMITED, 1982a. Cathedral Mountain Glacier: investigation by drilling. Letter report for Canadian Pacific Railway Limited, Calgary, Alberta from Hardy Associates Limited, 4 pp.

HARDY ASSOCIATES LIMITED, 1982b. Seismic survey for Canadian Pacific Limited on Cathedral Glacier, Yoho National Park. Report No. CG-12007 for Canadian Pacific Railway Limited, Calgary, Alberta from Hardy Associates Limited, 16 pp.

HARMON, D. and ROBINSON, B., 1981. Columbia Icefield: a solitude of ice. Altitude Publishing Ltd., Banff, Alberta, 103 pp.

HARRIS, S.A., 1981. Distribution of active glaciers and rock glaciers compared to the distribution of permafrost landforms, based on freezing and thawing indices. Canadian Journal of Earth Sciences, 18(2), February, 376-381

HATTERSLEY-SMITH, G., 1985. Spreading rate of an Arctic ice shelf. Nature, 315(6019), 6 June, 462

HAWKINS, F.F., 1980. Trend surface analaysis of present and paleo-equilibrium line altitudes in the Merchants Bay area, Baffin Island, Northwest Territories, Canada. Sixth AMQUA, American Quaternary Association, Abstracts of the Sixth Biennial Meeting, 18-20 August 1980, Orono, Maine, 91

HAWKINS, F.F., 1985. Equilibrium-line altitudes and paleoenvironment in the Merchants Bay area, Baffin Island, N.W.T., Canada. Journal of Glaciology, 31(109), 205-213

HEIDELBERGER GEOGRAPHISCHE ARBEITEN, 1981. Orthophotokarte - Oobloyah Bay (Ellesmere Island, N.W.T., Canada). Gebiet der Heidelberg-Ellesmere Island Expedition 1978. 1:25,000. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, map

HELL, G., 1981. Geödatische und photogrammetrische Arbeiten an der Oobloyah Bay, N-Ellesmere Island, N.W.T., Kanada, im Rahmen der "Heidelberg-Ellesmere Island-Expedition 1978"/Geodetical and photogrammetric studies during the Heidelberg Ellesmere Island Expedition 1978 to Oobloyah Bay, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 35-46

HOBBS, P., 1982. Alberta's incredible shrinking glacier. The Globe and Mail, Toronto, Ontario, Saturday, 22 May, ET8

HOLDSWORTH, G., 1981. Glaciology: Mt. Logan style. Canadian Alpine Journal, 64, 60

HOLDSWORTH, G., 1982a. Dynamics of Erebus Glacier tongue. Proceedings of the Third International Symposium on Antarctic Glaciology, 7-12 September 1981, Columbus, Ohio, Annals of Glaciology, Vol.3, 131-137

HOLDSWORTH, G., 1982b. Glaciological reconnaissance of an ice core drilling site, Penny Ice Cap, Baffin Island. Internal report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Calgary, Alberta, December, 44 pp.

HOLDSWORTH, G., 1982c. Glaciological reconnaissance of Mt. Edziza and Tellot Glacier Col, British Columbia. Unpublished report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Calgary, Alberta, August, 22 pp.

HOLDSWORTH, G., 1982d. Hypoxic glaciology: the final round on Mt. Logan. The Canadian Alpine Journal/Le journal alpin canadien, Vol.65, 55-56

HOLDSWORTH, G., 1982e. Ice Drilling Technology Workshop/Symposium. ICE, News Bulletin of the International Glaciological Society, No.69, 2nd Issue, 24-25

HOLDSWORTH, G., 1982f. Reviews - The Physics of Glaciers. By W.S.B. Paterson. Oxford: Pergamon Press Ltd., 1981. Second ed. 380 p., illus. Arctic, 35(2), June, 343

HOLDSWORTH, G., 1983a. A 100 year ice core record of volcanic pollution, topospheric (sic) chemistry and climate change in the Yukon. Abstracts, Proceedings of the 34th Alaska Science Conference, Alaska/Canada North: Neighbours in Science, 28 September - 1 October 1983, Whitehorse, Yukon, Arctic Division, American Association for the Advancement of Science, 132

HOLDSWORTH, G., 1983b. Meeting report - Advances in core drilling technology. EOS, Transactions, American Geophysical Union, 64(6), 8 February, 58

HOLDSWORTH, G., 1983c. Research proposal to investigate the dynamics and hydrology of Cathedral Glacier, Yoho National Park, B.C. Internal report for Parks Canada, National Hydrology Research Institute, Environment Canada, Calgary, Alberta, 15 pp. + map

HOLDSWORTH, G., 1984a. Climate-atmosphere variations from the analysis of ice cores: G. Holdsworth, National Hydrology Research Institute, Environment Canada. Information North, Arctic Institute of North America, Winter, 5-6

HOLDSWORTH, G., 1984b. The Canadian Rufli-Rand electro-mechanical core drill and reaming device. In - Ice Drilling Technology, G. Holdsworth, K.C. Kuivinen and J.H. Rand (Editors), Special Report No.84-34, Cold Regions Research and Engineering Laboratory, U.S. Army Corps of Engineering, Hanover, New Hampshire, December, 21-32

HOLDSWORTH, G., 1984c. Glaciological reconnaissance of an ice core drilling site, Penny Ice Cap, Baffin Island. Journal of Glaciology, 30(104), 3-15

HOLDSWORTH, G., 1984d. Preliminary report on the dynamics and hydrology of Cathedral Glacier, Yoho National Park, B.C. Internal Report, National Hydrology Research Institute, Environment Canada, Calgary, Alberta, October, 19 pp.

HOLDSWORTH, G., 1985. Carbon dioxide in the 19th and early 20th century atmosphere - evidence from an ice core from Mt. Logan, Yukon Territory. Internal report, Surface Water Division, National Hydrology Research Institute, Environment Canada, Calgary, Alberta, 6 pp.

HOLDSWORTH, G. and GLYNN, J.E., 1981. A mechanism for the formation of large icebergs. Journal of Geophysical Research, 86(C4), 20 April, 3210-3222

HOLDSWORTH, G., KROUSE, H.R., SHAKUR, A. and PEAKE, E., 1985. Reconnaissance of an ice core site, Columbia Ice Fields, Alberta. Internal report, National Hydrology Research Institute, Inland Waters Directorate, Environment Canada, Calgary, Alberta, February, 22 pp.

HOLDSWORTH, G., KUIVINEN, K.C. and RAND, J.H. (Editors), 1984. Ice Drilling Technology. Special Report No.84-34, Cold Regions Research and Engineering Laboratory, U.S. Army Corps of Engineering, Hanover, New Hampshire, December, 142 pp.

HOLDSWORTH, G. and PEAKE, E., 1985. Acid content of snow from a mid-troposhere sampling site on Mount Logan, Yukon Territory, Canada. Proceedings of the Symposium on Snow and Ice Chemistry and the Atmosphere, 19-24 August 1984, Peterborough, Ontario, Annals of Glaciology, Volume 7, 153-160

HOLDSWORTH, G., POURCHET, M., PRANTL, F.A. and MEYERHOF, D.P., 1984. Radioactivity levels in a firn core from the Yukon Territory, Canada. Atmospheric Environment, 18(2), 461-466

HOLDSWORTH, G., POWER, J. and CHRISTIE, R., 1983. Radar ice thickness measurements on Peyto Glacier. Internal report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, December, 18 pp.

HOLDSWORTH, G. and WAGSTAFF, K., 1985. Numerical simulation of ice shelf dynamics. SUPER-C Newsletter, 1(3), Summer, SuperComputing Services, University of Calgary, Calgary, Alberta, 7-8

HOOKE, R.L[eB]., 1981. Flow law for polycrystalline ice in glaciers: comparison of theoretical predictions, laboratory data, and field measurements. Reviews of Geophysics and Space Physics, 19(4), November, 664-672

HOOKE, R.LeB., ALEXANDER, E.C., Jr and GUSTAFSON, R.J., 1980. Temperature profiles in the Barnes Ice Cap, Baffin Island, Canada, and heat flux from the subglacial terrane. Canadian Journal of Earth Sciences, 17(9), September, 1174-1188

HOOKE, R.LeB. and CLAUSEN, H.B., 1982. Wisconsin and Holocene $\delta^{18}O$ variations, Barnes Ice Cap, Canada. Geological Society of America Bulletin, 93(8), August, 784-789

HOOKE, R.LeB., GOULD, J.E. and BRZOZOWSKI, J., 1983. Near-surface temperatures near and below the equilibrium line on polar and subpolar glaciers. Zeitschrift für Glaciologie und Glazialgeologie, 19(1), 1-25

HOOKE, R.LeB., GUSTAFSON, R.J., RAYMOND, C.F. and HOTCHKISS, R.L., 1980. Computer programs for calculating temperatures and velocities in polar glaciers using the finite-element method. Geomorphology Laboratory Report No.UM-GMPH-2, Department of Geology and Geophysics, University of Minnesota, Minneapolis, Minnesota, 95 pp.

HOOKE, R.LeB. and HUDLESTON, P.J., 1980. Ice fabrics in a vertical flow plane, Barnes Ice Cap, Canada. Journal of Glaciology, 25(92), 195-214

HOOKE, R.LeB. and HUDLESTON, P.J., 1981. Ice fabrics from a borehole at the top of the south dome, Barnes Ice Cap, Baffin Island. Geological Society of America Bulletin, Part 1, 92(5), May, 274-281

HORNE, E.P.W., 1985a. Ice-induced vertical circulation in an Arctic fiord (Paper 4C1203). Journal of Geophysical Research, 90(C1), 20 January, 1078-1086

HORNE, E.P.W., 1985a. Reply to comment on "Ice-induced vertical circulation in an Arctic fiord" by Steve Neshbya (Paper 4C1505). Journal of Geophysical Research, 90(C3), 30 May, 5013

HOULE, A., 1982. Livres sur le Nord - Le Grand Nord par Fritz Müller et collaborateurs. Editions Atlantic, Zürich, 1977, 278 pages, illustré, 87,00 $. North/Nord, 29(1), Spring/printemps, 59

HOWARTH, P.J., 1983. Evaluation of LANDSAT digital data for providing glaciological data. Final report, Contract No.KN107-1-4656, Perennial Snow and Ice Section, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, March, 43 pp.

HOWARTH, P.J. and OMMANNEY, C.S.L., 1983. LANDSAT digital data for updating glaciological information on topographic and glacier inventory maps. In - Automated Cartography: International Perspectives on Achievements and Challenges, Volume II, Proceedings of the Sixth International Symposium on Automated Cartography, B.S. Wellar (Editor), 16-21 October 1983, National Capital Region of Canada, 504-513

HUDLESTON, P.J., 1983. Strain patterns in an ice cap and implications for strain variations in shear zones. Journal of Structural Geology, 5(3-4), 455-463

HUDLESTON, P.J. and HOOKE, R.LeB., 1980. Cumulative deformation in the Barnes Ice Cap and implications for the development of foliation. Proceedings of Symposium on Analytical Studies in Structural Geology, W.M. Schwerdtner, P.J. Hudleston and J.M. Dixon (Editors), Tectonophysics, 66(1-3), 20 June, 127-146

INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES, 1980. Report on the final session of the Workshop. IASH-AISH Publication No.126, World Glacier Inventory Workshop, Proceedings of the Workshop at Riederalp, Switzerland, 17-22 September 1978, organized by the Temporary Technical Secretariat for the World Glacier Inventory, International Association of Hydrological Sciences, 349-351

JACKSON, L.E., Jr, 1980. New evidence on the origin of the September 6, 1978 jökulhlaup from Cathedral Glacier, British Columbia. Project 780045. In - Scientific and Technical Notes in Current Research, Part B, Geological Survey of Canada Paper No.80-1B, Ottawa, Ontario, 292-294

JACKSON, L.E., Jr and MacDONALD, G.M., 1980. Movement of an ice-cored rock glacier, Tungsten, N.W.T., Canada, 1963-1980. Arctic, 33(4), December, 842-847

JACOBS, J.D., MODE, W.D. and SQUIRES, C.A., 1984. Holocene environments of the Frobisher Bay area, Baffin Island, N.W.T. Program and Abstracts, Pleistocene and Holocene Stratigraphy and Paleoenvironments of Québec and Adjacent Regions, and 1st Symposium on Holocene Climates and Trends in North America and Greenland, J.-M. Dubois, Q.H.J. Gwyn and M. Parent (Editors), V$^{e}$ Congrès, Association Québécoise pour l'Étude du Quaternaire, 4-7 October 1984, Sherbrooke, Québec, 9

JACOBSEN, G.L., Jr and BIRKS, H.J.B., 1980. Soil development on recent end moraines of the Klutlan Glacier, Yukon Territory, Canada. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 87-100

JEFFRIES, M.[O.], 1982. The Ward Hunt Ice Shelf, Spring 1982. Arctic, 35(4), December, 542-544

JEFFRIES, M.O., 1983a. Arctic ice shelf studies, spring 1983. Contractor Report No.83-27, Defence Research Establishment Pacific, Department of National Defence, Sidney, British Columbia and Internal report, Polar Continental Shelf Project, Department of Energy, Mines and Resources, Ottawa, Ontario, 21 pp.

JEFFRIES, M.O., 1983b. Isotope variations in ice cores from Ward Hunt Ice Shelf and Milne Ice Shelf, Ellesmere Island, N.W.T. Contractor Report No.83-56, Defence Research Establishment Pacific, Department of National defence, Sidney, British Columbia, ** pp.

JEFFRIES, M.O., 1983c. Preliminary isotope studies on Ward Hunt Ice Shelf. Contractor Report Series No.83-26, Defence Research Establishment Pacific, Department of National Defence, Sidney, British Columbia, 56 pp.

JEFFRIES, M.O., 1984a. Arctic ice shelves and ice islands. GEOS, Department of Energy, Mines and Resources, Ottawa, Ontario, 13(1), 2-5

JEFFRIES, M.O., 1984b. Milne Glacier, northern Ellesmere Island, N.W.T., Canada: a surging glacier? Journal of Glaciology, 30(105), 251-253

JEFFRIES, M.O., 1984c. Specific electrolytic conductivity-salinity, oxygen-18 and tritium variations in the Ward Hunt and Milne ice shelves: a study of their origin, structure and behaviour. DREP Contractor Report Series No.84-42, Defence Research Establishment Pacific, Sidney, British Columbia, 91 pp.

JEFFRIES, M.O., 1985a. Ice shelf studies off northern Ellesmere Island, Spring 1983. Arctic, 38(3), September, 174-177

JEFFRIES, M.O., 1985b. Physical, chemical and isotopic investigations of Ward Hunt Ice Shelf and Milne Ice Shelf, Ellesmere Island, N.W.T. Ph.D. thesis, Department of Geography, University of Calgary, Calgary, Alberta, 310 pp.

JEFFRIES, M.O. and KROUSE, H.R., 1984a. Arctic ice shelf growth, fiord oceanography and climate. Paper presented at Symposium on Climate and Palaeoclimate of Lakes, Rivers amd Glaciers, 4-7 June 1984, Igls, Austria, Zeitschrift für Gletscherkunde und Glazialgeologie, Band 20, 147-153

JEFFRIES, M.O. and KROUSE, H.R., 1984b. Isotopic profile of a 32 m ice core from the Ward Hunt Ice Shelf. Joint Program with Abstracts, 18th Annual Congress, Canadian Meteorological and Oceanographic Society and 11th Annual Meeting, Canadian Geophysical Union, Marine Environment: Atmosphere, Ocean and Lithosphere, 29 May - 1 June 1984, Halifax, Nova Scotia, Atmosphere, 41-42

JEFFRIES, M.O. and SERSON, H., 1983. Recent changes at the front of Ward Hunt Ice Shelf, Ellesmere Island, N.W.T. Arctic, 36(3), September, 289-290

JOHNSON, H., 1984. Mudslide roars past rail crew. Calgary Herald, Calgary, Alberta, Thursday, 30 August, A1

JOHNSON, P.G., 1980a. Glacier-rock glacier transition in the southwest Yukon Territory, Canada. Arctic and Alpine Research, 12(2), May, 195-204

JOHNSON, P.G., 1980b. Grizzly Creek ice-cored moraine system. Quaestiones Geographicae, Vol.6, 69-78

JOHNSON, P.G., 1980c. Hydrology and hydrochemistry of unconsolidated rock masses and their controls on alpine hydrology. Report on Contract No.OSU79 00063, prepared for the Inland Waters Directorate, Environment Canada, Ottawa, Ontario by the Department of Geography, University of Ottawa, Ottawa, Ontario, 80 pp.

JOHNSON, P.G., 1980d. Rock glaciers: glacial and non-glacial origin. IAHS-AISH Publication No.126, World Glacier Inventory Workshop, Proceedings of workshop at Riederalp, Switzerland, 17-22 September 1978, organized by the Temporary Technical Secretariat for the World Glacier Inventory, International Association of Hydrological Sciences, 285-292

JOHNSON, P.G., 1981a. The structure of a talus-derived rock glacier deduced from its hydrology. Canadian Journal of Earth Sciences, 18(9), September, 1422-1430

JOHNSON, P., 1981b. Talus and rock glacier interpretation and Holocene palaeoclimatic fluctuations. Abstracts of papers presented at the Annual Meeting 1981, Canadian Association of Geographers/Résumés des communications presentées à la réunion annuelle 1981, de l'Association Canadienne des Géographes, C.W. Sanger and/et J.B. Macpherson (Editors/éditeurs), Department of Geography/Département de Géographie, Memorial University of Newfoundland, St. John's, Newfoundland and/et Sir Wilfred Grenfell College, Corner Brook, Newfoundland, August/août, 40

JOHNSON, P.G. (Compiler), 1982a. Canada. In - Glacial Hydrology, G.J. Young (Editor), Report GD-12, Glaciological Data, World Data Center A for Glaciology (Snow and Ice), Boulder, Colorado, March, 47-51

JOHNSON, P.G., 1982b. Prediction of runoff from glacierized areas: Canada. Report to Working Group on the Prediction of Glacier Runoff, International Commission on Snow and Ice, from Department of Geography, University of Ottawa, Ottawa, Ontario, 16 pp.

JOHNSON, P.G., 1982c. The proglacial Holocene environment, a zone of instability and mass movement. Abstracts of papers presented at the annual meeting 1982 Canadian Association of Geographers/Résumés des communications presentées à la réunion annuelle 1982 Association Canadienne des Géographes, Edited by/Réalisé par D.A.St-Onge & G.Rivard, University of Ottawa/Université d'Ottawa, Ottawa, Ontario, May/mai, 62

JOHNSON, P.G., 1983a. Glaciological conditions and geomorphological interpretation. Research Notes No.43, Department of Geography, Ottawa University, Ottawa, Ontario, 20 pp.

JOHNSON, P.G., 1983b. Holocene glaciological conditions, southwest Yukon. Research Notes No.44, Department of Geography, Ottawa University, Ottawa, Ontario, 19 pp.

JOHNSON, P.G., 1983c. Rapid mass movement phenomena, southwest Yukon. Meeting, Association of American Geographers, April 1983, Denver, Colorado, abstract, 64

JOHNSON, P.G., 1983d. Rock glacier formation. P.G. Johnson, University of Ottawa. Information North, Arctic Institute of North America, Winter, 6

JOHNSON, P.G., 1983e. Rock glaciers. A case for a change in nomenclature. Geografiska Annaler, 65A(1-2), 27-34

JOHNSON, P.G., 1984a. Paraglacial conditions of instability and mass movements: a discussion. Zeitschrift für Geomorphologie, 28(2), June, 235-250

JOHNSON, P.G., 1984b. Rock glacier formation by high-magnitude low-frequency slope processes in the southwest Yukon. Annals of the American Association of Geographers, 74(3), September, 408-419

JOHNSON, P.G., 1984c. Slope evolution and the Holocene environment of the Ruby Range, southwest Yukon. Abstracts and Program, 1984 Annual Meeting, Canadian Association of Geographers, Malaspina College, Nanaimo, B.C., 21-25 May 1984, 40

JOHNSON, P.G., 1985. Implications of Holocene palaeoclimatic changes for the glacier hydrology of the southwest Yukon. In - Climate and Paleoclimate of Lakes, Rivers and Glaciers, M. Kuhn (Editor), Zeitschrift für Gletscherkunde und Glazialgeologie, Vol.21, 165-174

JOHNSON, P.G. and KODYBKA, R.J., 1983. Problems of Quaternary glacial correlation due to regional ice/local ice interactions, Ruby Range, southwest Yukon. Abstracts-with-Program and Field Guide, Correlation of Quaternary Chronologies Symposium, 26-30 May 1983, Department of Geography, York University, Toronto, Ontario, 73-75

JOHNSON, P.G. and POWER, J.M., 1985a. Flood and landslide events, Peyto Glacier terminus, Alberta, Canada, 11-14 July 1983. Journal of Glaciology, 31(108), 86-91

JOHNSON, P. and POWER, J., 1985b. The role of high magnitude runoff events in glacierized basins. Abstracts, Glacier Mass-Balance, Fluctuations and Runoff, International Symposium, 20 September - 5 October 1985, Alma-Ata, U.S.S.R., Soviet Geophysical Committee, Academy of Sciences of the U.S.S.R., Moscow, 92-93

JOHNSON, R.F., 1982. Structural glaciology of the Cathedral Glacier, Atlin, B.C. Abstracts with Programs, 14(6), March, Geological Society of America, Rocky Mountain Section, 35th Annual Meeting, 7-8 May 1982, Bozeman, Montana, 316

JOHNSON, R.F., 1983. Ice movement and structural characteristics of the Cathedral Glacier system, Atlin Provincial Park, British Columbia. M.Sc. thesis, Department of **********, Montana State University, Bozeman, Montana, 65 pp.

JONES, D.P., 1980. A new sighting of **M solifugus** (ice worms), Lowell Glacier, Yukon. The Canadian Alpine Journal, Vol.63, 70

JONES, D.P., RICKER, K.E., DESLOGES, J.R. and MAXWELL, M., 1985. Glacier outburst flood on the Noeick River: the draining of Ape Lake, British Columbia, October 20, 1984. Geological Survey of Canada Open File Report No.1139, Vancouver, British Columbia, 107 pp.

JOUZEL, J. and SOUCHEZ, R.A., 1982. Melting-refreezing at the glacier sole and the isotopic composition of the ice. Journal of Glaciology, 28(98), 35-42

KATO, K., 1981. Records of production rate in the Little Ice Age of cosmic ray product $^{32}Si$ in Arctic ice cores. In - Proceedings of the Third Symposium on Polar Meteorology and Glaciology, Memoirs of National Institute of Polar Research Special Issue No.19, National Institute of Polar Research,Tokyo, October, 234-242. Also - Paper No.9, Collected Papers on Sciencs of Atmosphere and Hydrosphere, Vol.19, Water Research Institute, Nagoya University, Japan

KEARNEY, M.S., 1981. Late Quaternary vegetational and environmental history of Jasper National Park, Alberta. Ph.D. thesis, Department of Geography, University of Western Ontario, London, Ontario, 318 pp.

KELLERHALS, R., 1984. Debris torrents, the hazard and some mitigating suggestions. Abstracts and Program, 1984 Annual Meeting, Canadian Association of Geographers, Malaspina College, Nanaimo, B.C., 21-25 May 1984, **

KING, C.A.M., 1983. Book reviews - Paterson, S.B. 1981: The physics of glaciers, second edition. Oxford: Pergamon Press, vii + 380 pp. £20.00 cloth, £7.25 paper. Progress in Physical Geography, 7(1), March, 148-150

KING, L., 1981a. Das Borup-Fjord-Gebiet in N-Ellesmere Island, N.W.T., Kanada: Entdeckung und Begehung des Gebietes, vorhandene Karten und offizielle Namen/ Maps, geographical names and discovery of Borup Fiord and surroundings, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 15-23

KING, L., 1981b. Die Gletscher im Einzugsgebiet des Borup-Fjord, N-Ellesmere Island, N.W.T., Kanada/Glaciers of Borup Fiord area, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 203-232

KING, L., 1981c. Gletschergeschichtliche Arbeiten im Gebiet zwischen Oobloyah Bay und Esayoo Bay, N-Ellesmere Island, N.W.T., Kanada/Studies in glacial history of the area between Oobloyah Bay and Esayoo Bay, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der/Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 233-267

KING, L., 1983. Contribution to the glacial history of the Borup Fiord area, northern Ellesmere Island, N.W.T., Canada. In - Late- and Postglacial Oscillations of Glaciers: Glacial and Periglacial forms, H. Schroeder-Lanz (Editor), A.A. Balkema, Rotterdam, 305-323

KING, R.H., 1981. Holocene pedogenesis and environmental change at Sunwapta Pass, Jasper National Park, Alberta, Canada. Program and Abstracts, American Association of Geographers, Annual Meeting, Los Angeles, California, 167

KING, R.H., 1983. Quaternary paleosols in the Canadian Rockies and their significance for establishing a chronologic framework. Abstracts-with-Program and Field Guide, Correlation of Quaternary Chronologies Symposium, 26-30 May 1983, Department of Geography, York University, Toronto, Ontario, 77-79

KING, R.H., BEAUDOIN, A. and CHORLEY, F.J., 1981. Holocene environmental change in Jasper National Park - fourth interim report. Report to Parks Canada, Department of Geography, University of Western Ontario, London, Ontario, 26 pp.

KING, R.H., CAWKER, K.B., KEARNEY, M.S., BEAUDOIN, A. and HOLLAND, D.K., 1980. Holocene environmental change in Jasper National Park - third interim report. Report to Parks Canada, Department of Geography, University of Western Ontario, London, Ontario, , 37 pp.

KLASSEN, R.A., 1981. Aspects of the glacial history of Bylot Island, District of Franklin. Project 780018. In - Current Research, Part A, Geological Survey of Canada Paper No.81-1A, Ottawa, Ontario, 317-326

KLASSEN, R.A., 1982a. Glaciotectonic thrust plates, Bylot Island, District of Franklin. In - Current Research, Part A, Paper No.82-1A, Geological Survey of Canada, Ottawa, Ontario, 369-373

KLASSEN, R.A., 1982b. Glacial history of Bylot Island, N.W.T., Canada. Program with Abstracts, Geological Association of Canada and Mineralogical Association of Canada, Joint Annual Meeting, 17-19 May 1982, Winnipeg, Manitoba, Volume 7, 60

KLASSEN, R.A., 1982c. Quaternary stratigraphy and glacial history of Bylot Island, N.W.T., Canada. Ph.D. thesis, Department of Geology, University of Illinois, Urbana, Illinois, 193 pp.

KLASSEN, R.A., 1985. An outline of glacial history of Bylot Island, District of Franklin, N.W.T. In - Quaternary environments: eastern Canadian Arctic, Baffin Bay and West Greenland, J.T. Andrews (Editor), Allen and Unwin, London, U.K., October, 428-460

KODYBKA, R.J., 1982. History of the Yoho Glacier, British Columbia. The Canadian Alpine Journal/Le journal alpin canadien, Vol.65, 56-57

KOERNER, R.M., 1980a. Basal ice and paleoclimate. EOS, Transactions, American Geophysical Union, 61(5), 29 January, Abstract, 50

KOERNER, R.M. (Compiler), 1980b. VIII. Glacier studies. Canadian Geophysical Bulletin, Vol.33, Canadian National Committee for the International Union of Geodesy and Geophysics of the National Research Council of Canada, Earth Physics Branch, Energy, Mines and Resources Canada, Ottawa, Ontario, December, 214-223

KOERNER, R.M., 1980c. Instantaneous glacierization, the rate of albedo change, and feedback effects at the beginning of an ice age. Quaternary Research, an Interdisciplinary Journal, 13(2), March, 153-159

KOERNER, R.M., 1980d. The problem of lichen-free zones in Arctic Canada. Arctic and Alpine Research, 12(1), February, 87-94

KOERNER, R.M., 1981a. Acid precipitation in the High Arctic. Paper presented at biennial meeting, North East North America Branch, International Glaciological Society, 27 February - 1 March 1981, Château Montebello, Québec, Abstract, 1 pp.

KOERNER, R.M. (Compiler), 1981b. VIII: Glacier studies. Canadian Geophysical Bulletin, Vol.34, Canadian National Committee for the International Union of Geodesy and Geophysics of the National Research Council of Canada, Earth Physics Branch, Energy, Mines and Resources Canada, Ottawa, Ontario, December, 159-167

KOERNER, R.M. (Compiler), 1982. VIII. Glacier studies. Canadian Geophysical Bulletin, Vol.35, Canadian National Committee for the International Union of Geodesy and Geophysics of the National Research Council of Canada, Earth Physics Branch, Energy, Mines and Resources Canada, Ottawa, Ontario, December, 145-152

KOERNER, R.M. (Compiler), 1983. VIII. Glacier studies. Canadian Geophysical Bulletin, Volume 36, Canadian National Committee for the International Union of Geodesy and Geophysics of the National Research Council of Canada, Earth Physics Branch, Energy, Mines and Resources Canada, Ottawa, Ontario, December, 147-152

KOERNER, R.M. (Compiler), 1984. VIII. Glacier studies. Canadian Geophysical Bulletin, Vol.37, Canadian National Committee for the International Union of Geodesy and Geophysics of the National Research Council of Canada, Earth Physics Branch, Energy, Mines and Resources Canada, Ottawa, Ontario, December, 161-166

KOERNER, R.M., 1985a. Canadian Arctic Islands: glacier mass balance and global sea level. Glaciers, ice sheets, and sea level: effect of a $CO_2$-induced climatic change, Report of a Workshop held in Seattle, Washington, September 13-15, 1984, prepared by Ad Hoc Committee on the Relationship between Land Ice and Sea Level, Committee of Glaciology, Polar Research Board, National Research Council, Washington, D.C., Report No.DOE/ER/ 60235-1, Office of Energy Research, U.S. Department of Energy, September, 145-154

KOERNER, R.M., 1985b. Reviews - Ice Drilling Technology, Proceedings of the 2nd International Workshop/Symposium on Ice Drilling Technology, Calgary, Alberta, Canada. 30-31 August 1982. Edited by G. Holdsworth, K.C. Kuivinen and J.H. Rand. Arctic, 38(4), December, 349-350

KOERNER, R.M. and FISHER, D.A., 1981. Studying climatic change from Canadian High Arctic ice cores. In - Climatic Change in Canada, Vol.2, National Museum of Natural Sciences Project on Climatic Change in Canada during the past 20,000 years, C.R. Harington (Editor), Syllogeus No.33, 195-218

KOERNER, R.M. and FISHER, D., 1982. Acid snow in the Canadian High Arctic. Nature, 295(5845), 14 January, 137-140

KOERNER, R.M. and FISHER, D.A., 1985. The Devon Island ice core and the glacial record. In - Quaternary environments: eastern Canadian Arctic, Baffin Bay and West Greenland, J.T. Andrews (Editor), Allen & Unwin, London, UK, October, 309-327

KOERNER, R.M., FISHER, D.A. and PARNANDI, M., 1981. Bore-hole video and photographic cameras. Annals of Glaciology, Vol.2, Proceedings of the Symposium on Processes of Glacier Erosion and Sedimentation, Geilo, Norway, 25-30 August 1980, 34-38

KOTLYAKOV, V.M. and KRENKE, A.N., 1981. The role of land glaciation in the water and ice budget of the Arctic. Polar Geography, 5(2), April-June, 82-95

KRAUS, P., 1983. Glacier inventory of southeast Ellesmere Island, N.W.T., Canada and its application for estimating the annual run-off. Zürcher Geographische Schriften, Heft 9, Geographisches Institut, Eidgenössisches Technisches Hochschule, Zürich, 103 pp.

KRISTJANSSON, F.J., 1980. Cirque multiple glaciation, Grizzly Creek, Yukon Territory: paleoclimatic implications. M.A. thesis, Department of Geography, University of Ottawa, Ottawa, Ontario, 55 pp.

KUBBERNUS, L., 1983. Reviews - Columbia Icefield map. Canadian Alpine Journal/Le journal alpin canadien, Vol.66, 54

KUCERA, R.E., 1981. Exploring the Columbia Icefield. High Country Publishers, P.O. Box 500, Canmore, Alberta, 64 pp.

KUHN, M., 1983. Besprechungen - The Physics of Glaciers, 2nd edition. Zeitschrift für Gletscherkunde und Glazialgeologie, 18(2), 1982, 208-209

LACASSE, D., 1985. État des connaissances actuelles sur la chronologie des fluctuations glaciaire de l'Holocène, sud-ouest du Yukon. Geoscope, 15(2), Université d'Ottawa, avril, 80-93

LAM, C.S., 1984. Elevation bands, optimun elevations and mean elevation of a glacier. Unpublished report, Scientific Computing Division, Computing and Applied Statistics Directorate, Environment Canada, Ottawa, Ontario, March, 65 pp.

LAMBERT, J., 1980. Relative activity of rock glaciers in Grizzly Creek, Yukon Terr., Canada. Résumés des communications/Abstracts of papers, A. Ek-Trois-fontaines (Editor), Canadian Association of Geographers Annual Meeting/l'Association Canadienne des Géographes Reunion annuelle, May 26-28 mai, 1980, Université du Québec à Montréal, Québec, 21

LANG, H., 1981a. Obituary - Fritz Müller. Hydrological Sciences - Bulletin - des Sciences Hydrologiques, 26(3), September/septembre, 332-333

LANG, H., 1981b. Obituary - Fritz Müller. W.M.O. Bulletin, 30(3), July, 222

LEE, D., 1985. Canada's icy wilderness park - Kluane. National Geographic, 168(5), November, 630-657

LEMMEN, D.S., 1981. Postglacial emergence and late glacial history of Chandler Fiord, northeastern Ellesmere Island, High Arctic Canada. B.Sc. thesis, Department of Geography, University of Alberta, Edmonton, Alberta, 47 pp.

LEMMEN, D.S., 1984. Sedimentation in a glacially-fed Arctic lake: Tasikutaak Lake, Cumberland Peninsula, Baffin Island, N.W.T. M.Sc. thesis, Department of Geography, Queen's University, Kingston, Ontario, 157 pp.

LEMMEN, D.S. and GILBERT, R., 1984. Sedimentation in an Arctic proglacial lake, Baffin Island. Program with Abstracts, Geological Association of Canada, Mineralogical Association of Canada, Joint Annual Meeting, 14-16 May 1984, London, Ontario, Volume 9, abstract, 83

LEONARD, E.M., 1980. Late Holocene glacial activity and sediment yield, Banff National Park, Alberta. Sixth AMQUA, American Quaternary Association, Abstracts of the Sixth Biennial Meeting, 18-20 August 1980, Orono, Maine, 127

LEONARD, E.M., 1981. Glaciolacustrine sedimentation and Holocene glacial history, northern Banff National Park, Alberta. Ph.D. thesis, Department of ********, University of Colorado, Boulder, Colorado, 287 pp.

LEONARD, E.M., 1982a. Controls on sediment yield in a glacial environment. Program with Abstracts, 14(7), Geological Society of America, 95th Annual Meeting, 18-21 October 1982, New Orleans, Louisiana, August, 545

LEONARD, E.M., 1982b. Holocene glacial history, central Canadian Rocky Mountains: evidence from lacustrine sedimentary records. In - Character and Timing of Rapid Environmental and Climatic Changes, L.B. Brubaker and S.E. Chernicoff (Editors), 7th Biennial Conference of the American Quaternary Association, 28-30 June 1982, Seattle, Washington, Abstract, 120

LEONARD, E.M., 1985. Glaciological and climatic controls on lake sedimentation, Canadian Rocky Mountains. In - Climate and Paleoclimate of Lakes, Rivers and Glaciers, M. Kuhn (Editor), Proceedings of Symposium, 4-7 June 1984, Igls, Austria, Zeitschrift für Gletscherkunde und Glazialgeologie, Heft 21, 35-42

LEROUX, C., 1985. Inventaire et analyse des glaciers actuels en Colombie-Britannique. Essai de M.Sc.A. en environnement, Faculté des sciences appliquées, Rapport 85-M-28, Université de Sherbrooke, Sherbrooke, Québec, 88 pp.

LICHTI-FEDEROVICH, S., 1984. Investigation of diatoms found in surface snow from the Sydkap Ice Cap, Ellesmere Island, Northwest Territories. Project 720078. In - Current Research, Part A, Geological Survey of Canada Paper 84-1A, Ottawa, Ontario, 287-301

LIEDTKE, H., 1984. Rezensionen - Research in Glacial, Glaciofluvial and Glaciolacustrine Systems - Proceedings of the 6th Guelph Symposium on Geomorphology, 1980. Norwich 1982, 318 S. Zeitschrift für Geomorphologie, 28(1), März, 123-124

LIND, E.K., 1983. Holocene paleoecology and deglacial history of the Cape Rammelsberg area, southern Baffin Island, N.W.T., Canada. M.Sc. thesis, University of Colorado, Boulder, Colorado, 219 pp.

LIVERMAN, D.G.E., 1981. Sedimentology and drainage history of a glacier dammed lake, St. Elias Mountains, Yukon Territory. M.Sc. thesis, Department of Geography(?), University of Alberta, Edmonton, Alberta, *** pp.

LIXVAR, J., 1983. Glacier retreat in the Tchaikazan valley. Canadian Alpine Journal/Le journal alpin canadien, Vol.66, 67

LOCKE, W.W., III, 1980. The Quaternary geology of the Cape Dyer area, southeasternmost Baffin Island, Canada. Ph.D. thesis, Department of **********, University of Colorado, Boulder, Colorado, 348 pp.

LODWICK, G.D. and PAINE, S.H., 1985. A digital elevation model of the Barnes Ice-Cap derived from Landsat MSS data. Photogrammetric Engineering and Remote Sensing, 51(12), December, 1937-1944

LORRAIN, R.D. and DEMEUR, P., 1985. Isotopic evidence for relic Pleistocene glacier ice on Victoria Island, Canadian Arctic Archipelago. Arctic and Alpine Research, 17(1), February, 89-98

LORRAIN, R.D., SOUCHEZ, R.A. and TISON, J.L., 1981. Characteristics of basal ice from two outlet glaciers in the Canadian Arctic - implications for glacier erosion. Project 750063. In - Current Research, Part B, Geological Survey of Canada Paper No.81-1B, Ottawa, Ontario, 137-144

LUCKMAN, B.H., 1981a. The geomorphology of the Alberta Rocky Mountains: a review and commentary. In - High Mountains/Hochegebirge, O. Slaymaker (Editor), Zeitschrift für Geomorphologie, Supplementband 37, 91-119

LUCKMAN, B.H., 1981b. Little Ice Age and oxygen isotope studies in Jasper National Park. Report to Parks Canada, Department of Geography, University of Western Ontario, London, Ontario, January, 10 pp.

LUCKMAN, B.H., 1982. Little Ice Age and oxygen isotope studies in the middle Canadian Rockies. Report to Parks Canada, Department of Geography, University of Western Ontario, London, Ontario, 31 pp.

LUCKMAN, B.H., 1983. Field investigations in the Canadian Rockies in 1982. Report to Parks Canada and B.C. Parks from Department of Geography, University of Western Ontario, London, Ontario, April, 30 pp.

LUCKMAN, B.H., 1984a. Holocene environmental changes in the Canadian Rocky Mountains. Abstracts of Papers, Paper No.25.10, 25th International Geographical Congress, 27-31 August 1984, Paris, France, **

LUCKMAN, B.H., 1984b. Holocene environmental changes in the Canadian Rocky Mountains. Abstracts, International Geographical Congress, Symposium on Geoecology of Mountain Ecosystems, 18-26 August 1984, Berne, Switzerland, **

LUCKMAN, B.H., 1985a. Field activities in Jasper National Park in 1984. Report to Parks Canada and B.C. Parks from Department of Geography, University of Western Ontario, London, Ontario, May, 6 pp.

LUCKMAN, B.H., 1985b. Reconstructing Little Ice Age events in the Canadian Rockies. Program-with-Abstracts and Field Guide, CANQUA Symposium on the Paleoenvironmental Reconstruction of the Late Wisconsin Deglaciation and the Holocene, August 1955, Lethbridge, Alberta, 40

LUCKMAN, B.H., FRAZER, G.W., HAMILTON, J.P. and HARRY, D.G., 1984. Field activities in the Canadian Rockies in 1983. Report to Parks Canada and B.C. Parks from Department of Geography, University of Western Ontario, London, Ontario, March, 36 pp.

LUKE, P., 1981. Books - Next best to personal look. Columbia Icefield: a solitude of ice. The Citizen, Ottawa, Ontario, Saturday, 26 September, 41

MacKINNON, P.K., 1980. Ice core inventory. In - Ice cores, Report GD-8, Glaciological Data, P.K. MacKinnon (Compiler), World Data Center A for Glaciology <Snow and Ice>, Institute of Arctic and Alpine Research, Boulder, Colorado, 15-57

MacQUEEN, K., 1980. Frozen, floating monsters lure him north each year. The Citizen, Ottawa, Ontario, Wednesday, 31 December

MARSH, J., 1980. Mt. Moloch and Downie Lake: biophysical and historical research. The Canadian Alpine Journal, Vol.63, 65/68-70

MARSH, P. and WOO, M.-K., 1981. Snowmelt, glacier melt, and High Arctic streamflow regimes. Canadian Journal of Earth Sciences, 18(8), August, 1380-1384

MARSTON, R.A., 1983. Supraglacial stream dynamics on the Juneau Icefield. Annals of the Association of American Geographers, 73(4), December, 597-608

MÄUSBACHER, R., 1981. Geomorphologische Kartierung im OobloyahTal, N-Ellesmere Island, N.W.T., Kanada/Geomorphological mapping in the Oobloyah Valley, northern Ellesmere Island, N.W.T., Canada. In - Ergebnisse der /Results of the Heidelberg Ellesmere Island Expedition, D. Barsch und L. King (Herausgeber/Editors), Heidelberger Geographische Arbeiten, Heft 69, 413-440

MAYO, L.R., 1984. Glacier mass balance and runoff research in the U.S.A.. Geografiska Annaler, 66A(3), 215-227

McANDREWS, J.H., 1982. Pollen analysis of the 1973 core from Devon Island Ice Cap, Canada. In - Character and Timing of Rapid Environmental and Climatic Changes, L.B. Brubaker and S.E. Chernicoff (Editors), 7th Biennial Conference of the American Quaternary Association, 28-30 June 1982, Seattle, Washington, Abstract, 133

McANDREWS, J.H., 1984. Pollen analysis of the 1973 ice core from Devon Island glacier, Canada. Quaternary Research, 22(1), July, 68-76

McCANN, S.B., 1982. Glaciofluvial processes and sedimentation in the Canadian High Arctic. In - Research in Glacial, Glacio-fluvial and Glacio-lacustrine systems, Proceedings of 6th Guelph Symposium on Geomorphology, 9-10 May 1980, R. Davidson-Arnott, W. Nickling and B.D. Fahey, (Editors), Geographical Publication No.6, Department of Geography, University of Guelph, Geo Books Norwich, Geo Abstracts, Norwich, Abstract, 317

McCARTHY, D.P., 1985. Dating Holocene geomorphic activity of selected landforms in the Geikie Creek Valley, Mount Robson Provincial Park, British Columbia. M.Sc. thesis, Department of Geography, University of Western Ontario, London, Ontario, September, 303 pp.

McCOY, W.D., 1983. Holocene glacier fluctuations in the Torngat Mountains, northern Labrador. Géographie Physique et Quaternaire, 37(2), 211-216

McINTYRE, N.F., 1984. Cryoconite hole thermodynamics. Canadian Journal of Earth Sciences, 21(2), February, 152-156

McNEELY, R. and GUMMER, W.D., 1984. A reconnaissance survey of the environmental chemistry in east-central Ellesmere Island, N.W.T. Arctic, 37(3), September, 210-223

MEIER, M.F., 1983. The effect of glaciers on global sea level. EOS, Transactions, American Geophysical Union, 64(45), 8 November, abstract, 695

MEIER, M.F., 1984a. Contribution of small glaciers to global sea level. Science, 226(4681), 21 December, 1418-1421

MEIER, M.F., 1984b. Role of land ice in present and future sea-level change. EOS, Transactions, American Geophysical Union, 45(6), 6 November, abstract, 831

MEIER, M.F., 1985. Mass balance of the glaciers and small ice caps of the world. Glaciers, ice sheets, and sea level: effect of a $CO_2$-induced climatic change, Report of a Workshop held in Seattle, Washington, September 13-15, 1984, prepared by Ad Hoc Committee on the Relationship between Land Ice and Sea Level, Committee of Glaciology, Polar Research Board, National Research Council, Washington, D.C., Report No.DOE/ER/60235-1, Office of Energy Research, U.S. Department of Energy, September, 139-144

MEIER, M.F. and ROOTS, E.F., 1982. Glaciers as a water resource. Nature and Resources, 18(3), July-September, 7-14

MIALL, A.D., 1983. Glaciofluvial transport and deposition. In - Glacial Geology: an Introduction for Engineers and Earth Scientists, N. Eyles (Editor), Oxford, Pergamon Press, 168-183

MILLER, G.H., 1981 (?). Glacial and climatic history of northern Cumberland Peninsula, Baffin Island, Canada, during the last 10,000 years. ** Thesis, Department of *******, University of **********, ** pp.

MILLER, G.H., 1985. Moraines and proglacial lake shorelines, Hall Peninsula, Baffin Island. In - Quaternary environments: eastern Canadian Arctic, Baffin Bay and West Greenland, J.T. Andrews (Editor), Allen and Unwin, London, U.K., October, 546-557

MILLER, M.M., 1980 or 1981. Glaciological research in the Juneau Icefield. Water and Energy Update, Water and Energy Resources Institute, University of Idaho, Moscow, Idaho, January, 16-17

MILLER, M.M., 1985. Recent climatic variations, their causes and Neogene perspectives. In - Late Cenozoic History of the Pacific Northwest: interdisciplinary studies on the Clarkia fossil beds of northern Idaho, C.J. Smiley (Editor), ISBN 0-934394-06-7, Pacific Division, American Association for the Advancement of Science, San Francisco, California, 357-414

MILLER, M.M. and MILLER, J.W., 1980. 1980 student science training program Juneau Icefield, Alaska and the Atlin region, B.C. - Yukon, Canada. Final report supported by the National Science Foundation, Foundation for Glacier and Environmental Research, Seattle, Washington and College of Mines and Earth Resources, University of Idaho, Moscow, Idaho, January, 15 pp.

MILLER, M.M. and MILLER, J.W., 1982. 1981 student science training program, Juneau Icefield, Alaska and the Atlin Lakes region, B.C. - Yukon, Canada. Final report supported by the National Science Foundation, Foundation for Glacier and Environmental Research, Seattle, Washington and College of Mines and Earth Resources, University of Idaho, Moscow, Idaho, 16 pp.

MOKIEVSKY-ZUBOK, O., 1980a. Report on glaciological studies in Iskut River basin in 1980. Unpublished report to Hydroelectric Design Division, B.C. Hydro, Vancouver, B.C., Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 22 pp.

MOKIEVSKY-ZUBOK, O., 1980b. Selected information on some West Coast glaciers studied in 1979. Unpublished report to Hydrology Section, Burnaby Mountain SCS, B.C. Hydro, Vancouver, B.C., Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, January, 11 pp.

MOKIEVSKY-ZUBOK, O., 1980c. Sudden discharge of glacier-dammed Flood Lake, Aug. 1979. Summary report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, March, 17 pp.

MOKIEVSKY-ZUBOK, O., 1980d. Selected information on some West Coast glaciers studied in 1980. Unpublished report to Hydrology Section, Burnaby Mountain SCS, B.C. Hydro, Vancouver, B.C., Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 8 pp.

MOKIEVSKY-ZUBOK, O., 1981a. Selected information on some West Coast glaciers studied in 1981. Unpublished report to Hydrology Section, Burnaby Mountain SCS, B.C. Hydro, Vancouver, B.C., Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 10 pp.

MOKIEVSKY-ZUBOK, O., 1981b. Glaciological studies in Homathko River basin: progress report for 1981. Unpublished report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 15 pp.

MOKIEVSKY-ZUBOK, O., 1982. Glaciological studies in Iskut River basin in 1981: annual report. Unpublished report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 25 pp.

MOKIEVSKY-ZUBOK, O., 1983a. Glaciological studies in Homathko River basin in 1982: annual report. Internal report, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 18 pp.

MOKIEVSKY-ZUBOK, O., 1983b. Glaciological studies in Iskut River basin in 1982: annual report. Internal report, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 25 pp.

MOKIEVSKY-ZUBOK, O., 1983c. Selected information on some West Coast glaciers studied in 1982. Unpublished report to Hydrology Section, Burnaby Mountain SCS, B.C. Hydro, Vancouver, B.C., Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 12 pp.

MOKIEVSKY-ZUBOK, O., 1984a. Glaciological studies in Homathko River basin in 1983: annual report. Internal report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, January, 18 pp.

MOKIEVSKY-ZUBOK, O., 1984b. Glaciological studies in Iskut River basin in 1983: annual report. Internal report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, January, 30 pp.

MOKIEVSKY-ZUBOK, O., 1984c. Selected information on some West Coast glaciers studied in 1983. Unpublished report to Hydrology Section, Burnaby Mountain SCS, B.C. Hydro, Vancouver, B.C., Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 8 pp.

MOKIEVSKY-ZUBOK, O., 1985a. Glaciological studies in Bridge River Basin in 1984. Internal report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, January, 22 pp.

MOKIEVSKY-ZUBOK, O., 1985b. Glaciological studies in Homathko River Basin in 1984. Internal report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, January, 20 pp.

MOKIEVSKY-ZUBOK, O., 1985c. Glaciological studies in Iskut River Basin in 1984. Internal report to B.C. Hydro, Vancouver, B.C., National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, January, 30 pp.

MOKIEVSKY-ZUBOK, O., OMMANNEY, C.S.L. and POWER, J., 1985. NHRI glacier mass balance, 1964-1984 (Cordillera and Arctic). NHRI internal report, Glacier Section, Surface Water Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, November, 59 pp.

MOLLARD, J.D. and JANES, J.R., 1984. Airphoto interpretation and the Canadian landscape. ISBN 0-660-11591-3, Department of Energy, Mines and Resources, Ottawa, Ontario, 415 pp.

MONAHAN, D., 1981. Columbia Ice Field, Scale 1:50,000, published jointly by Parks Canada and the Inland Waters Directorate, Map No.IWD 1011. The Canadian Surveyor, 35(4), December, 441-442

MONTREAL STAR, 1981. About glaciers. The Montreal Star, Montréal, Quebec, Saturday, 12 September, 39

MORIN, B., 1985. Tracking the Kluane iceworm. In - The best of trivia from Canada's National Parks and curiouser and curiouser, Nature Canada, 14(4), Fall, 15-16

MORLAND, L.W. and SHOEMAKER, E.M., 1982. Ice shelf balances. Cold Regions Science and Technology, 5(3), March, 235-251

MULLER, D.S., 1980. Glacial geology and Quaternary history of southeast Meta Incognita Peninsula, Baffin Island, Canada. M.Sc. thesis, Department of Geological Science, University of Colorado, Boulder, Colorado, 211 pp.

MÜLLER, F., 1980. Glaciers and their fluctuations. Nature and Resources, 16(2), June, 5-11

MÜLLER, F., 1981. The living Arctic. Methuen Publications, Agincourt, Ontario, 233 pp.

MÜLLER, F., BERGER, P., ITO, H., OKAMURA, A., SCHROFF, K. and STEFFEN, K., 1980. Glaciological and climatological investigation of the North Water polynya in northern Baffin Bay. Report on North Water Project activities 1 April 1978 to 31 December 1979. Progress Report No.VI, ETH, Zürich and McGill University, Montréal, progress report in fulfilment of Contract No.OSU76-0151 Government of Canada, Contract No.DPP-7826132, U.S. National Science Foundation, Contract No.2.807-0.77, Schweizerischer Nationalfonds zur Forderung der Wissenschaftlichen Forschung, February, 123 pp.

MUNRO, D.S. and YOUNG, G.J., 1980. A net shortwave radiation model for glacierized basins. Proceedings of the Thirty-Seventh Annual Eastern Snow Conference, 5-6 June 1980, Peterborough, Ontario, 159-169

MUNRO, D.S. and YOUNG, G.J., 1981. A global radiation model for glacier basin investigations. Paper presented at biennial meeting, North East North America Branch, International Glaciological Society, 27 February - 1 March 1981, Château Montebello, Quebec, Abstract, 1 pp.

MUNRO, D.S. and YOUNG, G.J., 1982. An operational net shortwave radiation model for glacier basins. (Paper No.1W1909) Water Resources Research, 18(2), April, 220-230

MUNRO, M., 1982. Arctic work shows acid rain worsening. The Citizen, Ottawa, Ontario, Wednesday, 24 February, 62

NAKAWO, M. and YOUNG, G.J., 1981. Field experiments to determine the effect of a debris layer on ablation of glacier ice. Annals of Glaciology, Vol.2, Proceedings of the Symposium on Processes of Glacier Erosion and Sedimentation, Geilo, Norway, 25-30 August 1980, 85-91. Also - DBR Paper No.1010, Division of Building Research, National Research Council of Canada (NRCC 19757), Ottawa, Ontario.

NAKAWO, M. and YOUNG, G.J., 1982. Estimate of glacier ablation under a debris layer from surface temperature and meteorological variables. Journal of Glaciology, 28(98), 29-34. Also DBR Paper No.1036, Division of Building Research, National Research Council of Canada (NRCC 20268), Ottawa, Ontario

NEAL, C.S., 1982. High resolution radio echo sounding on Ellesmere Island, Northwest Territories. Polar Record, 21(130), January, 61-64

NEW SCIENTIST, 1981. Glaciers tune in to the ocean wave. New Scientist, 91(1261), 9 July, 84

NICKLING, W.G. and BRAZEL, A.J., 1985. Surface wind characteristics along the Icefield Ranges, Yukon Territory, Canada. Arctic and Alpine Research, 17(2), May, 125-134

OHMURA, A., 1981. Climate and energy balance on Arctic tundra, Axel Heiberg Island, Canadian Arctic Archipelago, spring and summer 1969, 1970 and 1972. Zürcher Geographische Schriften, Heft 3, Geographisches Institut, Eidgenössische Technische Hochschule, Zürich, 448 pp. (Dissertation No.6587)

OHMURA, A., 1982. Regional water balance on the Arctic tundra in summer. (Paper No.2W0149) Water Resources Research, 18(2), April, 301-305

OHMURA, A., 1984. Comparative energy balance study for Arctic tundra, sea surface, glaciers and boreal forests. GeoJournal, 8(3), 221-228

OMMANNEY, C.S.L., 1980a. The inventory of Canadian glaciers: procedures, techniques, progress and applications. IAHS-AISH Publication No.126, World Glacier Inventory Workshop, Proceedings of the Workshop at Riederalp, Switzerland, 17-22 September 1978, organized by the Temporary Technical Secretariat for the World Glacier Inventory, International Association of Hydrological Sciences, 35-44

OMMANNEY, C.S.L., 1980b. Stikine-Iskut region, British Columbia. Preliminary bibliography. Unpublished report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 4 pp.

OMMANNEY, C.S.L., 1981a. Named glaciers in Canada: map sheets 92M, 920/03, 920/04, 93I/01 and 105D/04. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Ottawa, Ontario, K1A 0E7, June, 51 pp.

OMMANNEY, C.S.L., 1981b. Obituary - Fritz Müller. Polar Record, 20(128), May, 465-466

OMMANNEY, C.S.L., 1981c. Report of the Advisory Committee on Glaciological and Alpine Nomenclature/Rapport du Comité consultatif de la nomenclature glaciologique et alpine. Canoma, 7(2), December/décembre, 25-26

OMMANNEY, C.S.L., 1982a. Bibliography of Canadian Glaciology, 1982 - Bibliography No.2, Ellesmere Island glaciers and ice shelves/Bibliographie de la glaciologie canadienne, 1982 - Bibliographie N°2, Glaciers et plates-formes de glace de l'île Ellesmere. Glacier Inventory Note No.9/Note N°9 de l'inventaire des glaciers, NHRI Paper No.20/Rapport N°20 de l'INRH, IWD Report Series No.58/étude N°58, série des rapport généraux de la DGEI, National Hydrology Research Institute/Institut national de recherche en hydrologie, Inland Waters Directorate/Direction général des eaux intérieures, Environment Canada/ Environnement Canada, Ottawa, Ontario, 53 pp.

OMMANNEY, C.S.L., 1982b. Bibliography of Canadian Glaciology, 1982 - Bibliography No.3, Ice islands of the Arctic Ocean/Bibliographie de la glaciologie canadienne, 1982 - Bibliographie N°3, Îles de glace de l'océan Arctique. Glacier Inventory Note No.11/Note N°11 de l'inventaire des glaciers, NHRI Paper No.21/Rapport N°21 de l'INRH, IWD Report Series No.73/étude N°73, série des rapport généraux de la DGEI, National Hydrology Research Institute/Institut national de recherche en hydrologie, , Inland Waters Directorate/Direction général des eaux intérieures, Environment Canada/Environnement Canada, Ottawa, Ontario, 40 pp.

OMMANNEY, C.S.L., 1982c. Named glaciers in Canada: map sheets 16K/5, 16K/12, 16L/7, 16L/8, 16L/9, 16L/10, 25J/1, 25J/2, 25J/7, 25J/8 AND 25J/10. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, December, 326 pp.

OMMANNEY, C.S.L., 1982d. Named glaciers in Canada: map sheets 26I/2, 26I/3, 26I/4, 26I/5, 26I/6, 26I/7, 26I/8, 26I/9 and 26I/10. Report to the Department of Indian and Northern Affairs, Parks Canada, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, December, 330 pp.

OMMANNEY, C.S.L., 1982e. Named glaciers in Canada: map sheets 26I/11, 26I/12, 26I/13, 26I/14, 26I/15, 26I/16 and 26J/16. Report to the Department of Indian and Northern Affairs, Parks Canada, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, December, 488 pp.

OMMANNEY, C.S.L., 1982f. Named glaciers in Canada: map sheets 26O/1, 26O/2, 26O/3, 26O/5-26O/12, 26P/1-26P/7 and 26P/10-26P/12. Report to the Department of Indian and Northern Affairs, Parks Canada, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, December, 302 pp.

OMMANNEY, C.S.L., 1982g. Named glaciers in Canada: map sheets 27/B, 27/C, 27/F, 37/D and 37/E. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, December, 294 pp.

OMMANNEY, C.S.L., 1982h. Ostheimer glacier names. Report to the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, November, 182 pp.

OMMANNEY, C.S.L., 1982i. Report of the Advisory Committee on Glaciological and Alpine Nomenclature/Rapport du Comité Consultatif de la Nomenclature Glaciologique et Alpine. Canoma, 8(2), December/décembre, 15-16

OMMANNEY, C.S.L., 1982j. Toponymic recognition for glaciologist Fritz Müller. Canoma, 8(1), July/juillet, 42-43

OMMANNEY, C.S.L., 1983a. Named glaciers in Canada: map sheets 37G/1, 37G/6-7, 37G/10-12, 37G/15, 37G/16, 37H/8 and 37H/13. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 233 pp.

OMMANNEY, C.S.L., 1983b. Named glaciers in Canada: map sheets 38B/4-5, 38B/1-2, 38B/8-10 and 38B/13-15. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 191 pp.

OMMANNEY, C.S.L., 1983c. Named glaciers in Canada: map sheets 38C/2-7, 38C/10, 38C/12, 48C/9-11, 48C/14-16, 48D/1-2 and 48D/7-9. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 289 pp.

OMMANNEY, C.S.L., 1983d. Named glaciers in Canada: map sheets 38G/4-5, 38G/13, 48E/7, 48E/9-11, 48E/13-16, 48G/1 and 48G/8-9. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 176 pp.

OMMANNEY, C.S.L., 1983e. Named glaciers in Canada: map sheets 39B/4-6, 39B/10-15, 39C/3-7, 39C/10-16, 39E/4-5 and 39E/11-14. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 366 pp.

OMMANNEY, C.S.L., 1983f. Named glaciers in Canada: map sheets 39F/1-16. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 353 pp.

OMMANNEY, C.S.L., 1983g. Named glaciers in Canada: map sheets 39G/2-7, 9-16, 39H/10-11, 13-16, 49A/1-2, 7-10, 12-13, 15-16, 49B/7-11 & 14-16. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 434 pp.

OMMANNEY, C.S.L., 1983h. Named glaciers in Canada: map sheets 48H/1-12 and 48H/ 14-15. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 183 pp.

OMMANNEY, C.S.L., 1983i. Named glaciers in Canada: map sheets 49C/1-3, 49D/1-2, 7-10, 15-16, 49E/1-3, 7-10, 15-16, 49H/1-2, 8-9 and 15-16. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 338 pp.

OMMANNEY, C.S.L., 1983j. Named glaciers in Canada: map sheets 120 B/4-5, 12-13, 120 C/2-4, 6-7, 13 and 16, 120 F/2-14 and 120 G/4. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, February, 333 pp.

OMMANNEY, C.S.L., 1983k. Named glaciers in Canada: map sheets 340A/1-2, 14-16, 340B/14-16, 340C/1-3, 1 and 15-16. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, February, 422 pp.

OMMANNEY, C.S.L., 1983l. Named glaciers in Canada: map sheets 340 D/1-2, 4-7 and 9-16. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, February, 301 pp.

OMMANNEY, C.S.L., 1983m. Named glaciers in Canada: map sheets 340 E/1-16, 340 F/1, 7-10, 16 and 340 H/1-3. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, February, 389 pp.

OMMANNEY, C.S.L., 1983n. Report of the Advisory Committee on Glaciological and Alpine Nomenclature/Rapport du Comité Consultatif de la Nomenclature Glaciologique et Alpine. Canoma, 9(2), December/décembre, 27-29

OMMANNEY, C.S.L., 1984a. Bibliographic information on the Freshfield, Lyell and Mons glaciers, Alberta. Internal report, Glacier Inventory Project, Surface Water Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, June, 9 pp.

OMMANNEY, C.S.L., 1984b. Canadian glacier variations and mass balance changes: 1975-1980 quadrennial report to the Permanent Service on the Fluctuations of Glaciers. Unpublished report, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, January, 255 pp.

OMMANNEY, C.S.L., 1984c. Named glaciers in Canada: map sheets 14 L/13, 14 M/3, 14M/5, 14M/12 and 24P/9. Report to the Province of Newfoundland, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, April, 70 pp.

OMMANNEY, C.S.L., 1984d. Report of the Advisory Committee on Glaciological and Alpine Nomenclature/Rapport de Comité Consultatif de la Nomenclature Glaciologique et Alpine. Canoma, 10(2), December/décembre, 24-25

OMMANNEY, C.S.L., 1985. Report of the Advisory Committee on Glaciological and Alpine Nomenclature/Rapport du comité consultatif de la nomenclature glaciologique et alpine. Canoma, 11(2), December/décembre, 26-27

OMMANNEY, C.S.L. and JACKSON, J., 1984a. Named glaciers in Canada: map sheets 49G/5, 59E/5, 11-14, 59G, 59G/6-16 and 560A/2-3. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Surface Water Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, May, 274 pp.

OMMANNEY, C.S.L. and JACKSON, J., 1984b. Named glaciers in Canada: map sheets 59H/5-7, 10-13. Report to the Department of Indian and Northern Affairs, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Surface Water Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, May, 252 pp.

OMMANNEY, C.S.L. and JACKSON, J., 1984c. Named glaciers in Canada: map sheets 83D/1-3, 7-8, 13 and 16. Report to the Provinces of British Columbia and Alberta, the National Parks Branch, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Surface Water Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, June, 276 pp.

OMMANNEY, C.S.L. and JACKSON, J., 1984d. Named glaciers in Canada: map sheets 92G/09, 92G/10, 92G/11, 92G/14, 92G/15 and 92G/16. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Surface Water Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, June, 314 pp.

OMMANNEY, C.S.L. and JACKSON, J., 1984e. Named glaciers in Canada: map sheets 92J/01, 92J/02, 92J/03, 92J/04, 92J/05, 92J/06, 92J/07. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, April, 374 pp.

OMMANNEY, C.S.L. and JACKSON, J., 1984f. Named glaciers in Canada: map sheets 92J/08, 92J/10, 92J/11, 92J/12, 92J/13, 92J/14. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, April, 322 pp.

OMMANNEY, C.S.L. and LEROUX, C., 1982a. Named glaciers in Canada: map sheets 83E/02 and 83E/03. Report to the Provinces of British Columbia and Alberta, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, October, 102 pp.

OMMANNEY, C.S.L. and LEROUX, C., 1982b. Named glaciers in Canada: map sheets 92K/09, 92K/10, 92K/15 and 92K/16. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, October, 236 pp.

OMMANNEY, C.S.L. and LEROUX, C., 1982c. Named glaciers in Canada: map sheets 92M/07, 92M/08, 92M/09, 92M/10 and 92M/16. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, October, 96 pp.

OMMANNEY, C.S.L. and LEROUX, C., 1982d. Named glaciers in Canada: map sheets 92N/01, 92N/02, 92N/03, 92N/04 and 92N/05. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, October, 284 pp.

OMMANNEY, C.S.L. and LEROUX, C., 1982e. Named glaciers in Canada: map sheets 92N/06. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, October, 238 pp.

OMMANNEY, C.S.L. and LEROUX, C., 1982f. Named glaciers in Canada: map sheets 92N/07, 92N/08, 92N/09, 92N/10, 92N/11, 92N/12, 92N/13, 92N/14, 92N/15 and 92N/16. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, K1A 0E7, October, 110 pp.

OMMANNEY, C.S.L. and STROME, M.M., 1981a. Named glaciers in Canada: map sheets 49G, 59E and 59F. Report to the Northwest Territories, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Ottawa, Ontario, K1A 0E7, March, 29 pp.

OMMANNEY, C.S.L. and STROME, M.M., 1981b. Named glaciers in Canada: map sheets 82M, 82N and 83D/09. Report to the Provinces of British Columbia and Alberta, the National Parks Branch, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Ottawa, Ontario, K1A 0E7, March, 75 pp.

OMMANNEY, C.S.L. and STROME, M.M., 1981c. Named glaciers in Canada: map sheets 83C/02, 83C/03, 83C/04 and 83C/05. Report to the Provinces of British Columbia and Alberta, the National Parks Branch, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Ottawa, Ontario, K1A 0E7, March, 135 pp. & maps

OMMANNEY, C.S.L. and STROME, M.M., 1981d. Named glaciers in Canada: map sheets 92G, 93C/04, 93D/07, 93D/08, 93D/14 and 93E/02. Report to the Province of British Columbia, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Ottawa, Ontario, K1A 0E7, March, 43 pp.

OMMANNEY, C.S.L. and STROME, M.M., 1981e. Named glaciers in Canada: map sheets 115F/10, 115G/03, 115G/05 and 115G/06. Report to the Yukon Territory, the National Parks Branch, the Geographical Names Secretariat and the Advisory Committee on Glaciological and Alpine Nomenclature. Internal report, Glacier Inventory Project, Snow and Ice Division, National Hydrology Research Institute, Ottawa, Ontario, K1A 0E7, March, 55 pp.

OROMBELLI, G., 1982. Recensioni - Paterson, W.S.B. (1981). The physics of glaciers, 2nd edition. Pergamon Press, Oxford, 380 pp. Geografia Fisica e Dinamica Quaternaria, 5(2), 430

OSBORN, G.D., 1980. Preliminary observations on Holocene glacier fluctuations in Waterton - Glacier International Peace Park. Proceedings of the Second Conference on Scientific Research in the National Parks, Vol.5 - Physical Sciences, 26-30 November 1979, San Francisco, California, National Park Service, U.S. Department of the Interior, 307-319

OSBORN, G., 1981a. Characteristics of some glacier bergschrunds in the Canadian Rockies. Abstracts, Geological Association of Canada Annual Meeting, Vol.6, A45

OSBORN, G., 1981b. Glacier crevasses, an enigma to be explored. GEOS, 10(1), Winter, Energy, Mines and Resources Canada, 15-17

OSBORN, G., 1981c. Holocene glacier and climate fluctuations in the southern Canadian Rocky Mountains: a review. In - Holocene Glaciers, W. Karlén (Editor), Striae 18, Societas Upsaliensis Pro Geologia Quaternaria, Uppsala, 15-25

OSBORN, G., 1981d. Reviews - World glacier inventory workshop (proceedings). Published by the International Association of Hydrological Sciences, 1980. 351 p. Arctic, 34(1), March, 93

OSBORN, G., 1982. Holocene glacier and climate fluctuations in the Canadian Rocky Mountains. Abstracts, XI Congress of the International Union for Quaternary Research. August 1982, Moscow, **

OSBORN, G., 1983. Characteristics of the bergschrund of an avalanche cone glacier in the Canadian Rocky Mountains. Journal of Glaciology, 29(101), 55-69

OSBORN, G., 1984a. 2000 year history of the Bugaboo Glacier, Purcell Mountains, British Columbia. Program and Abstracts, 8th Biennial Meeting, American Quaternary Association, 13-15 August 1984, Boulder, Colorado, 97

OSBORN, G., 1984b. Holocene tephrostratigraphy and glacial fluctuations in the Waterton-Glacier area, Alberta and Montana. Abstracts with Programs, 16(6), Geological Society of America, 97th Annual Meeting, 5-8 November 1984, Reno, Nevada, September, 614

OSBORN, G., 1985a. Discussion of "Movement of ice-cemented rock glaciers by hydrostatic pressure: an example from Mount Mestas, Colorado" by John Giardino. Zeitschrift für Geomorphologie, 29(3), September, 373-375

OSBORN, G., 1985b. Holocene tephrostratigraphy and glacial fluctuations in Waterton Lakes and Glacier national parks, Alberta and Montana. Canadian Journal of Earth Sciences, 22(7), July, 1093-1101

OSBORN, G., 1985c. Interpretation of lateral moraine stratigraphy. Abstracts with Program, 17(*), Geological Society of America, 683

OSBORN, G. and DAVIS, P.T., 1985. Age of pre-Altithermal cirque moraines in the American and southern Canadian Cordillera. Abstracts of the CANQUA Symposium on Paleoenvironmental Reconstruction of the Late Wisconsin Deglaciation and the Holocene, August 1985, Lethbridge, Alberta, 50

OSBORN, G. and LUCKMAN, B.H., 1981. Origin of an unusual Holocene diamicton in Banff National Park, Alberta, Canada. Zeitschrift für Geomorphologie, 25(3), September, 290-299

OSTERMAN, L.E., MILLER, G.H. and STRAVERS, J.A., 1982. Late Quaternary history of southeastern Baffin Island, N.W.T., Canada. Abstracts with Programs, 14(7), August, Geological Society of America, 95th Annual Meeting, 18-21 October 1982, New Orleans, Louisiana, 581

ØSTREM, G., HAAKENSEN, N. and ERIKSSON, T., 1981. The glaciation level in southern Alaska. Geografiska Annaler, 63A(3-4), 251-260

OVERGAARD, S., 1980. Radio echo sounding data from Penny Ice Cap of 9 May 1979. Report No.AR82, Electromagnetics Institute, Technical University of Denmark, Lyngby, Denmark, *** pp.

PADMORE, T., 1981. Growing glaciers a threat to future water supplies. The Vancouver Sun, Friday, 16 September, A13

PAGÉ, P., 1980. Comportement des isotopes du milieu dans les facies de transition glacio-marins: exemple du fjord Cornelius Grinnell (T.N.O.), Canada. Résumés des communications, 48e congrès, 14-16 mai 1980, Université Laval, Annales de l'ACFAS, 47(1), Association canadienne-française pour l'avancement des sciences, 112

PALECKI, M.A., SERREZE, M.C. and BRADLEY, R.S., 1985. Glacio-climatic studies of a High Arctic plateau glaciers. Part 5: Boundary layer conditions. In - Glacial Geologic and Glacio-Climatic Studies in the Canadian High Arctic, R.S. Bradley (Editor), Contribution No.49, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 217-249

PATERSON, E., 1984. We watch a glacier give birth to an iceberg. The Medical Post, 26 December, 26

PATERSON, E., 1985. Alaska: pregnant ladies and baby icebergs. The Medical Post, 8 January, 65

PATERSON, W.S.B., 1980a. Chapter 1. Ice sheets and ice shelves. In - Dynamics of Snow and Ice Masses, S.C. Colbeck (Editor), Academic Press, New York, 1-78

PATERSON, W.S.B., 1980b. Symposium on Glacier Beds. The Ice-Rock Interface. Ottawa, Aug. 1978. International Glaciological Society, Cambridge, England, 1979. 446 pp., illus. Paper, £25. Journal of Glaciology, Vol.23, No.89. Science, 210(4476), 19 December, 1341-1342

PATERSON, W.S.B., 1981. The physics of glaciers. Pergamon Press, Oxford and New York, 2nd Edition, 380 pp.

PATERSON, W.S.B., 1983a. Data on the size of former ice sheets. In - The climatic record in polar ice sheets, G. de Q. Robin (Editor), Cambridge University Press, Great Britain, 19-21

PATERSON, W.S.B., 1983b. Deformation within polar ice sheets: an analysis of the Byrd Station and Camp Century borehole-tilting measurements. Cold Regions Science and Technology, 8(2), October, 165-179

PATERSON, W.S.B., 1983c. Surface profiles of ice sheets. In - The climatic record in polar ice sheets, G. de Q. Robin (Editor), Cambridge University Press, Great Britain, 22-25

PATERSON, W.S.B., 1983d. Techniques for measuring temperatures in glaciers and ice sheets. In - The climatic record in polar ice sheets, G. de Q. Robin (Editor), Cambridge University Press, Great Britain, 63-65

PATERSON, W.S.B., 1984a. Book review - Theoretical Glaciology by Kolumban Hutter. D. Reidel, Dordrecht, Netherlands/Terra, Tokyo, Japan: 1983. Cold Regions Science and Technology, 10(1), November, 99-102

PATERSON, W.S.B., 1984b. Fizika lednikov (The physics of glaciers). Mir, Moscow, 472 pp.

PATERSON, W.S.B., 1984c. Present and future melting on Antarctic ice shelves. In - Environment of West Antarctica: Potential $CO_2$-induced Changes, Report of a Workshop held in Madison, Wisconsin, 5-7 July 1983, Committee on Glaciology, Polar Research Board, National Research Council, Washington, D.C., National Academy Press, 140-154

PATERSON, W.S.B., 1985a. Glaciology. In - Encyclopaedia of Physical Science and Technology, Academic Press, San Diego, in press

PATERSON, W.S.B., 1985b. Ice caps. In - The Canadian Encyclopaedia, J.H. Marsh (Editor), Hurtig, Edmonton, 858

PATERSON, W.S.B., 1985c. Matters arising - Flow law for ice in polar ice sheets. Nature, 318(6041), 7 November, 82-83

PATERSON, W.S.B., 1985d. A numerical model for estimating the response of an ice shelf to $CO_2$-induced climatic warming. Report, Cooperative Institute for Research in Environmental Sciences, University of Colorado and National Oceanic and Atmospheric Administration, Boulder, Colorado, 28 pp.

PATERSON, W.S.B. and BUDD, W.F., 1982. Flow parameters for ice sheet modeling. Cold Regions Science and Technology, 6(2), November, 141-148

PATERSON, W.S.B. and WADDINGTON, E.D., 1984a. Past accumulation rates at Camp Century and Devon Island, deduced from ice-core measurements. Proceedings of the Symposium on Ice and Climate Modelling, 27 June - 1 July 1983, Annals of Glaciology, Vol.5, Abstract, 222-223

PATERSON, W.S.B. and WADDINGTON, E.D., 1984b. Past precipitation rates derived from ice-core measurements: methods and data analysis. Reviews of Geophysics and Space Physics, 22(2), May, 123-130

PERCHANOK, M.S., 1980a. History of a glacier dammed lake on Donjek River, Yukon. M.A. thesis, Department of Geography, Carleton University, Ottawa, Ontario, *** pp.

PERCHANOK, M.S., 1980b. Reconnaissance of glacier-dammed lakes in the Stikine and Iskut River basins, British Columbia. Unpublished report for the National Hydrology Research Institute, Inland Waters Directorate, Environment Canada, Ottawa, Ontario, Contract No. KL229-0-4292, November, 38 pp. & maps.

PERLA, R. and POWER, J., 1984. Reviews - Hydrological aspects of alpine and high-mountain areas. Edited by J.W. Glen. Proceedings of the Exeter Symposium organized by the IAHS International Commission on Snow and Ice with the support of UNESCO. IAHS Publication 138, 1982, 350 + ix p. US$30. Arctic, 37(1), March, 80

PETER AND CATHARINE WHYTE FOUNDATION, 1983. Legacy in ice. The Cairn, 7(4), Summer, 1-2

PEULVAST, J.P., 1981. Symposium on Glacier Beds: the Ice-rock Interface. Revue de géologie dynamique et de géographie physique, 22(4-5), 360-361

PICKARD, J., 1984. Comment on "Wastage of the Klutlan ice-cored moraines, Yukon Territory, Canada" by Driscoll (1980). Quaternary Research, 22(2), September, 259

PORTER, S.C., 1980. Editorial - The Klutlan Glacier issue. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 1

PORTER, S.C., 1981. Recent glacier variations and volcanic eruptions. Nature, 291(5811), 14 May, 139-142

POST, A. and MEIER, M.F., 1984. Fluctuations of calving glaciers in Glacier Bay not primarily due to climate variations. In - A Century after Muir: the Scientific Adventure, J.D. Woods, Jr. (Editor), Proceedings of the First Glacier Bay Science Symposium, 23-26 September 1983, Gustavus, Alaska, abstract, 14

POWELL, R.D., 1980. Holocene glaciomarine sediment deposition by tide-water glaciers in Glacier Bay, Alaska. Ph.D. thesis, Department of **********, Ohio State University, Columbus, Ohio, 420 pp.

POWELL, R.D., 1981. A model for sedimentation by tidewater glaciers. Annals of Glaciology, Vol.2, Proceedings of the Symposium on Processes of Glacier Erosion and Sedimentation, Geilo, Norway, 25-30 August 1980, 129-134

POWER, J.M., 1985. Canada case study: water supply. Techniques for prediction of runoff from glacierized areas, G.J. Young (Editor), IAHS Publication No.149, International Association of Hydrological Sciences, 59-71

PRAGER, B.T., 1981. UHF radio echo-sounding of some ice shelves and glaciers on northern Ellesmere Island, N.W.T., Canada, 1981. Internal report, Department of Geophysics and Astronomy, University of British Columbia, Vancouver, British Columbia, 10 pp.

PREST, V.K., 1983. Canada's heritage of glacial features/l'héritage glaciaire du Canada. Miscellaneous Report/Rapport divers No.28, Geological Survey of Canada/Commission géologique du Canada, Ottawa, Ontario, 119 pp.

RADOK, U., 1981. Book reviews - Dynamics of snow and ice masses. Edited by Samuel C. Colbeck. New York: Academic Press, 1980. x + 468 pp. $55.00 Arctic and Alpine Research, 13(2), May, 233-234

RAGLE, R.H., 1980. The glaciers: nature's sculptors. In - Kluane: Pinnacle of the Yukon, J.B. Theberge (Editor), Doubleday Canada Ltd., Toronto, Ontario, 18-30

RAISBECK, G.M. and YIOU, F., 1985. $^{10}Be$ in polar ice and atmospheres. Proceedings of the Symposium on Snow and Ice Chemistry and the Atmosphere, 19-24 August 1984, Peterborough, Ontario, Annals of Glaciology, Volume 7, 138-140

RAMPTON, V.N., 1981. Surficial materials and landforms of Kluane National Park, Yukon Territory. Geological Survey of Canada Paper No.79-24, Ottawa, Ontario, 37 pp. + maps

REEH, N., 1984. Reconstruction of the glacial ice covers of Greenland and the Canadian Arctic Islands by three-dimensional, perfectly plastic ice-sheet modeling. Proceedings of the Symposium on Ice and Climate Modelling, 27 June - 1 July 1983, Annals of Glaciology, Vol.5, 115-121

REEH, N., 1985. Was the Greenland ice sheet thinner in the Late Wisconsinan than now? Nature, 317(6040), 31 October, 797-799

REEH, N. and FISHER, D.A., 1985. Noise in accumulation rate and $^{18}O$ time series as determined from comparison of adjacent Greenland and Devon Island ice cap cores. Internal report, Polar Continental Shelf Project, Energy, Mines and Resources Canada, Ottawa, Ontario, ** pp.

REID, I.A. and CHARBONNEAU, J.O.G., 1980. Glacier surveys in British Columbia - 1978. Inland Waters Directorate Report Series No.66, Water Resources Branch, Environment Canada, Ottawa, Ontario, 23 pp. + maps

REID, I.A. and CHARBONNEAU, J.O.G., 1981a. Glacier surveys in Alberta - 1979. Inland Waters Directorate Report Series No.69, Water Resources Branch, Environment Canada, Ottawa, Ontario, 19 pp. + maps

REID, I.A. et CHARBONNEAU, J.O.G., 1981b. Levés de glaciers en Colombie-Britannique - 1978. Étude N° 66, Série des rapport généraux, Direction générale des eaux intérieures, Direction des ressources en eaux, Environnement Canada, Ottawa, Ontario, 24 pp. + cartes

RETELLE, M.J., 1985a. Glacial geology and Quaternary marine and lacustrine stratigraphy of the Robeson Channel area, northeastern Ellesmere Island, N.W.T., Canada. Ph.D. Thesis, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 243 pp.

RETELLE, M.J., 1985b. Glacial geology and Quaternary marine stratigraphy of the Robeson Channel area, northeastern Ellesmere Island, N.W.T., Canada. In - Glacial Geologic and Glacio-Climatic Studies in the Canadian High Arctic, R.S. Bradley (Editor), Contribution No.49, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 9-55

RHO, F., 1980. Glaciers eternels. Atlas à la decouverte du monde, No.169/7, juillet, 25-34

RICKER, K.E., 1980. Earth science features and glacier regimen of the Clendenning and Elaho Ranges, Coast Mtns., British Columbia. The Canadian Alpine Journal, Vol.63, 57-65

RICKER, K., 1981a. Corrigenda: Earth science features and glacier regimen of the Clendenning and Elaho Ranges, Coast Mtns, British Columbia. Canadian Alpine Journal, Vol.64, 59-60

RICKER, K., 1981b. International Glaciological Society Symposium on Processes of Glacier Erosion and Sedimentation, 24 August to 4 of September, Geilo, Norway. Canadian Alpine Journal, Vol.64, 60-62

RICKER, K., 1981c. Recent decisions by the Canadian Permanent Committee of Geographic Names, Garibaldi Park 1980. Canadian Alpine Journal, Vol.64, 74

RICKER, K.E., 1983a. "New Moon Glacier" and covering mineral claims - assessment of glacier basin and adjacent morainal area. Preliminary report prepared for St. Joe Canada Inc., Vancouver, B.C., 26 pp. & maps

RICKER, K., 1983b. Preliminary observations on a multiple morainal sequence and associated periglacial features on the Mt. Tatlow area, Chilcotin Ranges, Coast Mountains. Canadian Alpine Journal/Le journal alpin canadien, Vol.66, 61-67

RICKER, K., 1985. Ape Lake is indeed a beast - 20 October 1984 jökulhlaup. Canadian Alpine Journal/Le journal alpin canadien, Vol.68, 41-43

RICKER, K. (in press), 1987a. Ape Lake. Canadian Alpine Journal/Le journal alpin canadien, Vol.70, **-**

RICKER, K. (in press), 1987b. Tchaikazan Glacier. Canadian Alpine Journal/Le journal alpin canadien, Vol.70, **-**

RICKER, K.E. and JOZSA, L., 1984. Retreat of the New Moon Glacier, Buckley Ranges, Hazelton Mountains, western British Columbia. Canadian Alpine Journal/Le journal alpin candien, Vol.67, 66-69

RICKER, K.E. and PARKE, A., 1984. Caltha Lake moraines and other natural history matters, Stein River Divide, Lillooet Ranges of the Coast Mountains. Canadian Alpine Journal/Le journal alpin candien, Vol.67, 62-65

RICKER, K. and RICKER, W.E., 1986. More monkey wrenching with the plumbing of Ape Lake and its surrounding glaciers. Canadian Alpine Journal/Le journal alpin canadien, Vol.69, 45-47

RICKER, K. and TUPPER, W.A., 1979. Wedgemount Lake and Glacier studies, northern Garibaldi Park, 1978. The Canadian Alpine Journal, Vol.62, 65-66

RICKER, K. and TUPPER, W.A., 1980. Wedgemount Lake and Glacier, northern Garibaldi Park: 1979 progress report. The Canadian Alpine Journal, Vol.63, 55-57

RICKER, K. and TUPPER, W.A. (in press), 1987. Overlord Glacier. Canadian Alpine Journal/Le journal alpin canadien, Vol.70, **-**

RICKER, K., TUPPER, W.A., LYON, R.D. and FAIRLEY, J., 1983. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1982 progress report. Canadian Alpine Journal/Le journal alpin canadien, Vol.66, 58-61

ROBIN, G. de Q., 1983a. The climatic record from ice cores. In - The climatic record in polar ice sheets, G. de Q. Robin (Editor), Cambridge University Press, Great Britain, 180-195

ROBIN, G. de Q., 1983b. Profile data, Greenland region. In - The climatic record in polar ice sheets, G. de Q. Robin (Editor), Cambridge University Press, Great Britain, 98-112

ROGERS, G., 1980. Map and report on the Camp 26 Llewellyn Glacier cave system. National Science Foundation field report to Glaciological Institute, College of Mines and Earth Resources, University of Idaho, Moscow, Idaho, December, ** pp.

ROGERSON, R.J., 1985. Measured re-advance of a debris-covered glacier terminus in the President Range, Yoho National Park, British Columbia, Canada. Journal of Glaciology, 31(107), 13-17

ROGERSON, R.J., 1986. Mass balance of four cirque glaciers in the Torngat Mountains of northern Labrador, Canada. Journal of Glaciology, 32(111), 208-218

ROGERSON, R.J. and BATTERSON, M.J., 1982. Contemporary push moraine formation in the Yoho Valley, B.C. In - Research in Glacial, Glacio-fluvial and Glacio-lacustrine systems, Proceedings of 6th Guelph Symposium on Geomorphology, 9-10 May 1980, R. Davidson-Arnott, W. Nickling and B.D. Fahey, (Editors), Geographical Publication No.6, Department of Geography, University of Guelph, Geo Books Norwich, Geo Abstracts, Norwich, 71-90

ROGERSON, R.J. and EVANS, D.J.A., 1984. Glaciation of the northern Selamiut Range and part of Nachvak Fiord, Torngat Mountains, northern Labrador. Abstracts, 13th Annual Arctic Workshop, Institute of Arctic and Alpine Research, University of Colorado, Boulder, Colorado, 49

ROGERSON, R.J. and KODYBKA, R., 1981. Forms of subglacial erosion on Palaeozoic sedimentary rocks. Annals of Glaciology, Vol.2, Proceedings of the Symposium on Processes of Glacier Erosion and Sedimentation, Geilo, Norway, 25-30 August 1980, Abstract, 68

ROOTS, E.F., 1984. Glacier mass balance measurements - an honourable past, an important future. Geografiska Annaler, 66A(3), 165-167

ROYAL EOGRAPHICAL SOCIETY, 1982. The Columbia Icefield map. The Geographical Journal, 148(1), March, 140

RUNDQUIST, D.C., COLLINS, S.G., BARNES, R.B., BUSSON, D.E., SAMSON, S.A. and PEAKE, J.S., 1980. The use of LANDSAT digital information for assessing glacier inventory parameters. IAHS-AISH Publication No.126, World Glacier Inventory Workshop, proceedings of the workshop at Riederalp, Switzerland, 17-22 September 1978, organized by the Temporary Technical Secretariat for the World Glacier Inventory, International Association of Hydrological Sciences, 321-329

RUTTER, N.W. and CATTO, N.R., 1981. Reviews - Symposium on glacier beds: the ice-rock interface. Arctic, 34(2), June, 190-191

SACKINGER, W.M., SHOEMAKER, H.D., SERSON, H., JEFFRIES, M.O. and YAN, M., 1985. Ice islands as hazards to Arctic offshore production structures. Paper No.OTC-4932, Proceedings, 17th Annual Offshore Technology Conference, 6-9 May 1985, Houston, Texas, 399-408

SACKINGER, W.M. and JEFFRIES, M.O., 1984. Arctic ice island and sea ice movements and mechanical properties. Fifth Quarterly Report, 1 October - 31 December, Contract No.AC21-83MC-20037, U.S. Department of Energy, Morgantown Technology Center, Morgantown, West Virginia, ** pp.

SACKINGER, W.M., SERSON, H., JEFFRIES, M.O., SHOEMAKER, H.D. and YAN, M., 1985. Ice island generation and trajectories north of Ellesmere Island, Canada. Proceedings, POAC 85, 8th International Conference on Port and Ocean Engineering under Arctic Conditions, 7-14 September 1985, Narssarssuaq, Greenland, 1009-1040

SAUCHYN, D.J., GARDNER, J.S. and SUFFLING, R., 1983. Evaluation of botanical methods of dating debris flows and debris-flow hazard in the Canadian Rocky Mountains. Physical Geography, 4(2), December, 182-201

SCHEFFEL, R.L. and WERNERT, S.J. (Editors), 1980. Reader's Digest natural wonders of the world. The Reader's Digest Association Ltd., Pleasantville, New York, 463 pp.

SCHICK, W.J., 1980. Donjek Glacier surge. The Canadian Alpine Journal, Vol.63, 65/67

SCHWARTZ, J.M., 1983. Book reviews: Legacy in Ice by Edward Cavell, The Whyte Foundation, 98 pp., $19.95, paperback. Canadian Geographic, 103(5), October/ November, 80-81

SCIENCE NEWS, 1983. Erosion may alter ice core records. Science News, 123(7), 12 February, 107

SERREZE, M. and BRADLEY, R.S., 1983. Topoclimatic studies of a small plateau ice cap, northern Ellesmere Island, N.W.T., Canada. Abstracts of the 12th Arctic Workshop, 16-18 March 1983, University of Massachusetts at Amherst, Contribution No.44, Department of Geology and Geography, University of Massachusetts, Amherst, 57-59

SERREZE, M.C. and BRADLEY, R.S., 1985a. Glacio-climatic studies of a High Arctic plateau glaciers. Part 3: Radiation climatology. In - Glacial Geologic and Glacio-Climatic Studies in the Canadian High Arctic, R.S. Bradley (Editor), Contribution No.49, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 167-194

SERREZE, M.C. and BRADLEY, R.S., 1985b. Glacio-climatic studies of a High Arctic plateau glaciers. Part 4: Energy budget. In - Glacial Geologic and Glacio-Climatic Studies in the Canadian High Arctic, R.S. Bradley (Editor), Contribution No.49, Department of Geology and Geography, University of Massachusetts, Amherst, Massachusetts, 195-216

SERSON, H., 1984. Ice conditions off the north coast of Ellesmere Island, Nansen Sound, Sverdrup and Peary Channels, 1963 to 1980. Appendix A, Arctic Ice Island and Sea Ice Movements and Mechanical Properties, Second Quarterly Report, Contract No.AC21-83MC-20037, U.S. Department of Energy, Morgantown Technology Center, Morgantown, West Virginia, March, ** pp.

SHAW, J., 1985. Subglacial and ice marginal environments. In - Glacial Sedimentary Environments, G.M. Ashley, J. Shaw and N.D. Smith (Editors), SEPM Short Course, Volume 16, 7-84

SHI, YAFENG, 1982. Dao nian Fu li ci Mou le (Fritz Müller) jiao shou. (Condolence to Professor Fritz Müller. Journal of Glaciology and Cryopedology, 4(3), August, 104-108

SHOEMAKER, E.M., 1981. Creep slump in glacier reservoirs - theory and experiment. Journal of Glaciology, 27(97), 393-406

SHOEMAKER, E.M., 1985a. Cylindrical flow in and over channels of irregular shape. Journal of Glaciology, 31(108), 177-184

SHOEMAKER, E.M., 1985b. Effects of subglacial groundwater on ice sheets. Abstracts, Workshop on Hydraulic Effects at the Glacier Bed and Related Phenomena, 16-19 September 1985, Interlaken, Switzerland, VAW/ETH Zürich, Switzerland, 1 pp.

SHORT, S.K. and HOLDSWORTH, G., 1985. Pollen, oxygen isotope content and seasonality in an ice core from the Penny Ice Cap, Baffin Island. Arctic, 38(3), 214-218

SHORT, S.K., MODE, W.N. and DAVIS, P.T., 1985. The Holocene record from Baffin Island: modern and fossil pollen studies. In - Quaternary environments: eastern Canadian Arctic, Baffin Bay and West Greenland, J.T. Andrews (Editor), Allen and Unwin, London, U.K., October, 608-642

SLEATH, A.W. and FLETCHER, W.K., 1982. Geochemical dispersion in a glacier meltwater stream, Purcell Mountains, British Columbia. Paper presented at Fifth Symposium on Prospecting in Areas of Glaciated Terrain, 23-25 August 1982, Memorial University of Newfoundland, St. John's, Newfoundland. CIM Bulletin, 75(843), July, abstract, 56

SMART, C.C., 1981a. Glacier-ground water interactions and quantitative groundwater tracing in the vicinity of Mount Castleguard, Banff National Park, Canada. Proceedings of the Eighth International Congress of Speleology, B.F. Beck (Editor), 18-24 July 1981, Bowling Green, Kentucky, U.S.A., 720-723

SMART, C.C., 1981b. Quantitative dye tracing in an alpine karst environment. Proceedings of the Eighth International Congress of Speleology, B.F. Beck (Editor), 18-24 July 1981, Bowling Green, Kentucky, U.S.A., Abstract, 587

SMART, C.C., 1983a. The hydrology of the Castleguard karst, Columbia Icefields, Alberta, Canada. In - Castleguard Cave and karst, Columbia Icefields area, Rocky Mountains of Canada: a symposium, D.C. Ford (Editor), Arctic and Alpine Research, 15(4), November, 471-486

SMART, C.C., 1983b. Hydrology of a glacierised alpine karst: Castleguard Mountain, Alberta. Ph.D. thesis, Department of Geography, McMaster University, Hamilton, Ontario, 343 pp.

SMART, C.C., 1984a. Glacier hydrology and the potential for subglacial karstification. Norsk Geografisk Tidsskrift, 38(*), 157-161

SMART, C.C., 1984b. Stable isotope hydrology of a glacierised alpine karst. EOS, Transactions, American Geophysical Union, 65(45), 6 November, abstract, 885

SMART, C.C. and FORD, D.C., 1981. Evolution of the Columbia Icefield - Castleguard River karst groundwater system, Rocky Mountains of Alberta. Abstracts with Programs, 13(7), September, Geological Society of America, 94th Annual Meeting, 2-5 November 1981, 2-5 November 1981, Cincinnati, Ohio, 556

SMART, C.C. and FORD, D.C., 1982. Quantitative dye tracing in a glacierised alpine karst. In - Tracermethoden in der Hydrologie, C. Leibundgut and R. Weingartner (Editors), Beiträge zur Geologie der Schweiz-Hydrologie, 28(1), 191-200

SMART, C.C. and FORD, D.C., 1983. The Castleguard karst, Main Ranges, Canadian Rocky Mountains. In - V.T. Stringfield Sumposium: Processes in Karst Hydrology, W. Back and P.E. Lamoreaux (Editors), Journal of Hydrology, 61(1-3), February, 193-197

SMITH, H.R. and PATTON, F.D., 1984. Comparison of the Devastation Glacier slide with other high velocity debris flows. In - IV International Symposium on Landslides/Symposium international sur les glissements de terrain, Vol.2, 16-21 September 1984, Toronto, University of Toronto Press, Downsview, Ontario, abstract, 96

SMITH, N.D., 1981. The effect of changing sediment supply on sedimentation in a glacier-fed lake. Arctic and Alpine Research, 13(1), 75-82

SMITH, N.D., 1985. Proglacial fluvial environment. In - Glacial Sedimentary Environments, G.M. Ashley, J. Shaw and N.D. Smith (Editors), SEPM Short Course, Volume 16, 83-134

SMITH, N.D. and ASHLEY, G.M., 1985. Proglacial lacustrine environment. In - Glacial Sedimentary Environments, G.M. Ashley, J. Shaw and N.D. Smith (Editors), SEPM Short Course, Volume 16, 135-215

SMITH, N.D. and SYVITSKI, J.P.M., 1982. Sedimentation in a glacier-fed lake: the role of pelletization on deposition of fine-grained suspensates. Journal of Sedimentary Petrology, 52(2), June, 503-514

SMITH, N.D., VENOL, M.A. and KENNEDY, S.K., 1982. Comparison of sedimentation regimes in four glacier-fed lakes of western Alberta. In - Research in Glacial, Glacio-fluvial and Glacio-lacustrine systems, Proceedings of 6th Guelph Symposium on Geomorphology, 9-10 May 1980, R. Davidson-Arnott, W. Nickling and B.D. Fahey, (Editors), Geographical Publication No.6, Department of Geography, University of Guelph, Geo Books Norwich, Geo Abstracts, Norwich, 203-238

SOUCHEZ, R.A. and de GROOTE, J.M., 1985. - $^{18}O$ relationships in ice formed by subglacial freezing: paleoclimatic implications. Journal of Glaciology, 31(109), 229-232

SPROTT, D.L. and BAWDEN, W.F., 1985. Ice as a backfill material in underground mines. CIM Bulletin, 78(875), March, abstract, 65-66

STÄBLEIN, G., 1983. Rezensionen - Paterson, W.S.B.: The physics of glaciers. - 2. Aufl., 380 S., zahlreiche Fig. und Tab. (DM 41,-). Pergamon Press, Oxford et al. 1981. Zeitschrift für Geomorphologie, 27(2), Juni, 251-251

STÄBLEIN, G., 1984. Rezensionen - Barsch, D. & L. King: Ergebnisse der Heidelberg-Ellesmere Island-Expedition; Results of the Heidelberg Ellesmere Island Expedition - Heidelberger Geogr. Arb., 69, 573 Seiten, zahlreiche Abb., 2 Beilagekarten (DM 70,-), Heidelberg 1981. Zeitschrift für Geomorphologie, 28(2), Juni, 261-262

STEFFEN, K. and MÜLLER, F., 1980. Local snow distribution on Axel Heiberg Island, Canada: an empirical method of extrapolation from snow-course data on White Glacier. Polar Geography and Geology, 4(4), October-December, 211-223. Translated from Geographica Helvetica, 32(4), 1977, 195-202

STEINER, D., 1980. Fritz Müller. Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich, 125(4), Dezember, 408-410

STENNING, A.J., 1980. Synoptic controls on katabatic layer characteristics above a temperate alpine-type glacier - Peyto Glacier, Alberta. M.Sc. thesis, Department of Geography, Memorial University of Newfoundland, St. John's, Newfoundland, August, 193 pp.

STENNING, A. and BANFIELD, C.E., 1981. Synoptic controls over katabatic layer characteristics above a melting glacier. Abstracts of papers Geographers/ Résumés des communications presentées à la réunion annuelle 1981, de l'Association Canadienne des Géographes, C.W. Sanger and/et J.B. Macpherson (Editors/ éditeurs), Department of Geography/Département de Géographie, Memorial University of Newfoundland, St. John's, Newfoundland and/et Sir Wilfred Grenfell College, Corner Brook, Newfoundland, August/ août, 21

STENNING, A.J., BANFIELD, C.E. and YOUNG, G.J., 1981. Synoptic controls over katabatic layer characteristics above a melting glacier. Journal of Climatology, 1(4), October/December, 309-324

STIX, J., 1980. Glaciers of the Nachvak Fiord region, northern Labrador. Draft report to Snow and Ice Division, National Hydrology Research Institute, Environment Canada, Ottawa, Ontario, 12 pp. + photos + data sheets

STRAVERS, J.A., 1982. Initial findings of field research in the Grinnell Glacier, Everett Mountains area of southern Baffin Island, July and August 1981. American Alpine Journal, 24(56), 124-126

SUGDEN, D.E., 1984. Book reviews - Davidson-Arnott, R., Nickling, W. and Fahey, B.D. editors, 1982: Research in glacial, glacio-fluvial and glacio-lacustrine systems. Norwich: Geo Books. iv + 318 pp. £11.50, US $23.00. Progress in Physical Geography, 8(3), September, 459-461

SWEETMAN, K., 1982. Ottawa loses, Saskatoon wins federal research agency. The Citizen, Ottawa, Ontario, Saturday, 20 March, 3

TANGBORN, W.V., 1980. Dolia lednikovogo stoka v formirovanii gidroenergeticheskikh resursov reki Kolumbii/Contribution of glacier runoff to hydroelectric power generation on the Columbia River. Materialy Gliatsiologicheskikh Issledovanii, Khronika, Obsuzhdeniia, Mezhduvedomstvennyi Geofizicheskii Komitet, Sektsiia Gliatsiologii, Institut Geografii, Academy Nauk SSSR/Data of Glaciological Studies, Chronicle, Discussion, Section of Glaciology of the Soviet Geophysical Committee and Institute of Geography, Academy of Sciences of the U.S.S.R., No.39, Moskva/Moscow, Iiuni/July, in Russian 62-67, in English 140-143

TANGBORN, W.V., 1984. Prediction of glacier derived runoff for hydroelectric development. Geografiska Annaler, 66A(3), 257-265

TAYLOR, R.B. and FROBEL, D., 1984. Coastal surveys, Jones Sound, District of Franklin. Project 820043. In - Current Research, Part B, Geological Survey of Canada Paper No.84-1B, Ottawa, Ontario, 25-32

TEMPELMAN-KLUIT, A., 1983. Galloping glacier rolling again: surging along in Kluane Park. The Sun, Vancouver, B.C., Monday, 29 August, **

TEMPELMAN-KLUIT, A., 1984. Lowell unleashed: Yukon's peripatetic glacier pushes outward. Equinox, Issue 15, 3(3), May-June, 129

THEAKSTONE, W.H., 1980. Glacial geomorphology. Progress in Physical Geography, 4(2), June, 241-253

THEBERGE, J.B. (Editor), 1980. Kluane: Pinnacle of the Yukon. Doubleday Canada Ltd., Toronto, Ontario, 175 pp.

THOMPSON, D.E., 1980a. Geomorphic and hydraulic analysis of catastrophic flood features in the Alsek River valley, Yukon. Reports of Planetary Geology Program, 1980, NASA Technical Memorandum No.8235, National Aeronautics and Space Administration, Washington D.C., December, 392-393

THOMPSON, D.E., 1980b. Pre-surge characteristics and water storage in Trapridge Glacier, Yukon, 1980. Reports of Planetary Geology Program, 1980, NASA Technical Memorandum No.8235, National Aeronautics and Space Administration, Washington D.C., December, 386-388

THOMPSON, D.E., 1980c. Relation of scour by catastrophic flooding to peak discharge from jökulhlaup hydrographs. Proceedings of Colloquium on Planetary Water, 27-29 October 1980, Niagara Falls, New York, No.3, 30-35

THOMPSON, D.E., 1980d. Surging glaciers as an oscillatory stable flow. Reports of Planetary Geology Program, 1980, NASA Technical Memorandum No.8235, National Aeronautics and Space Administration, Washington D.C., December, 389-391

TUPPER, W.A. and RICKER, K., 1981. Wedgemount Glacier surveys, Coast Mountains, B.C., 1976 to 1980. Joint annual meeting of Canadian Geophysical Union, Mineralogical Association of Canada and Geological Association of Canada, **-** May 1981, University of Calgary, Calgary, Alberta, **-**

TUPPER, W.A. and RICKER, K.E., 1982. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1981 progress report. The Canadian Alpine Journal/Le journal alpin canadien, Vol.65, 51-52

TUPPER, W.A., RICKER, K.E., BREMNER, R., FRANKICH, K., and FAIRLEY, J., 1984. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1983 progress report. Canadian Alpine Journal/Le journal alpin candien, Vol.67, 61-62

TUPPER, W.A., RICKER, K.E., FAIRLEY, J. and LYON, R.D., 1986. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1985 progress report. The Canadian Alpine Journal/Le journal alpin canadien, Vol.69, 44-45

TUPPER, W.A., RICKER, K. and LYON, R.D., 1981. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1980 progress report. Canadian Alpine Journal, Vol.64, 58-59

TUPPER, W.A., RICKER, K.E., LYON, R.D. and PARKE, A. (in press), 1987. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1985 progress report. The Canadian Alpine Journal/Le journal alpin canadien, Vol.70, -4-45

TUPPER, W.A., RICKER, K.E. and McKNIGHT, B., 1985. Wedgemount Lake and Glacier studies, northern Garibaldi Park: 1984 progress report. The Canadian Alpine Journal/Le journal alpin canadien, Vol.68, 41

TURCOTTE, P., 1984. Comptes rendus - DAVIDSON-ARNOTT, R., NICKLING, W. et FAHEY, B.D., édit. (1982): Research in Glacial, Glacio-fluvial, and Glacio-lacustrine Systems, Proceedings of the 6th Guelph Symposium on Geomorphology, Geo Books Norwich in association with Geomorphology Symposium, University of Guelph, Geographical Publication No.6, 319 p., 142 fig., 15 x 23 cm, 23$ U.S. Géographie Physique et Quaternaire, 38(2), 211-212

UNITED STATES, NATIONAL RESEARCH COUNCIL, 1985. Glaciers, ice sheets, and sea level: effect of a $CO_2$-induced climatic change. Report of a Workshop held in Seattle, Washington, September 13-15, 1984. Prepared by Ad Hoc Committee on the Relationship between Land Ice and Sea Level, Committee of Glaciology, Polar Research Board, National Research Council, Washington, D.C., Report No.DOE/ER/60235-1, Office of Energy Research, U.S. Department of Energy, September, 330 pp.

U.S.S.R., ACADEMY OF SCIENCES, 1981. Pamiati Professora Fritza Müllera. Data of Glaciological Studies, Chronicle, Discussion, Publication No.40, Section of Glaciology of the Soviet Geophysical Committee and Institute of Geography, Academy of Sciences of the U.S.S.R., November, 242

VanDINE, D.F., 1985a. Debris flows and debris torrents in the southern Canadian Cordillera. Canadian Geotechnical Journal, 22(1), February, 44-68

VanDINE, D.F., 1985b. Debris flows and debris torrents in the southern Canadian Cordillera: reply. Canadian Geotechnical Journal, 22(4), November, 609

VERRALL, R. and BAADE, D., 1984. A simple hot-water drill for pentrating ice shelves. In - Ice Drilling Technology, G. Holdsworth, K.C. Kuivinen and J.H. Rand (Editors), Special Report No.84-34, Cold Regions Research and Engineering Laboratory, U.S. Army Corps of Engineering, Hanover, New Hampshire, December, 87-94

VINOGRADOV, O.G. and HOLDSWORTH, G.H., 1985. Oscillation of a floating glacier tongue. Cold Regions Science and Technology, 10(3), April, 263-271

WAAG, C.J., 1981. Folds in firn. Geological Society of America Bulletin, Part 1, 92(5), May, 268-273

WADDINGTON, E.D., 1981. Accurate modelling of glacier flow. Ph.D. thesis, Department of Geophysics and Astronomy, University of British Columbia, Vancouver, British Columbia, 402 pp.

WADDINGTON, E. and CLARKE, G.K.C., 1981. UBC radar bibliography. Unpublished report, Department of Geophysics and Astronomy, University of British Columbia, Vancouver, B.C., 63 pp.

WADDINGTON, E.D. and PRAGER, B., 1981. Ice depth measurements Surprise Creek Glacier, Mt. Pattullo area, by monopulse radio echo sounding. Internal report, Department of Geophysics and Astronomy, University of British Columbia, Vancouver, British Columbia, 14 July, 6 pp.

WALDRON, D.A., 1981. Model simulations of the sudden discharge of glacier-dammed Flood Lake, August 1979. Unpublished report, Department of Astronomy and Geophysics, University of British Columbia, Vancouver, British Columbia, May, 15 pp. + appendices.

WARREN, S.G., 1982. Book reviews - W.S.B. Paterson, The Physics of Glaciers. Climatic Change, 4(3), 320

WATSON, R.A., 1980. Landform development on moraines of the Klutlan Glacier, Yukon Territory, Canada. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 50-59

WEERTMAN, J., 1983. Creep deformation of ice. Annual Review of Earth and Planetary Sciences, No.11, 215-240

WEIRICH, F.H., 1982. Site location and instrumentation aspects of a study of sedimentation processes in a proglacial lake in southeastern British Columbia, Canada. In - Research in Glacial, Glacio-fluvial and Glacio-lacustrine systems, Proceedings of 6th Guelph Symposium on Geomorphology, 9-10 May 1980, R. Davidson-Arnott, W. Nickling and B.D. Fahey, (Editors), Geographical Publication No.6, Department of Geography, University of Guelph, Geo Books Norwich, Geo Abstracts, Norwich, 239-260

WEIRICH, F.H., 1982. Sedimentation processes in a high altitude proglacial lake in southeastern British Columbia. Ph.D. thesis, Department of **********, University of Toronto, Toronto, Ontario, 266 pp.

WEIRICH, F.H., 1985. Sediment budget for a high energy glacial lake. Geografiska Annaler, 67A(1-2), 83-99

WEISS, J., 1980. Fritz Müller. Polarforschung, 50(1-2), 81-82

WEISS, J., 1984. Massenhaushalt eines Gletschers, Fragen an glaziologische Untersuchungen und die Resultate der Messreihe am White Glacier in der kanadischen Arktis. Diplomarbeit, Geographische Institut, University of Zürich and ETH, Zürich, Switzerland, 149 pp.

WHARTON, R.A., Jr, McKAY, C.P., SIMMONS, G.M., Jr and PARKER, B.C., 1985. Cryoconite holes on glaciers. BioScience, 35(8), September, 499-503

WHITESIDE, M.C., BRADBURY, J.P. and TARAPCHAK, S.J., 1980. Limnology of the Klutlan moraines, Yukon Territory, Canada. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 130-148

WIFFEN, S.W., 1982. Computerized areal calculations of glaciers and the student's role. Co-op Work Term Report, Department of Geography, University of Waterloo, Waterloo, Ontario, 13 September, 23 pp. + appendices

WIFFEN, S.W., 1983. A procedure manual for digitizing the Glacier Inventory Project. Unpublished report prepared for Professor L. Guelke, Department of Geography, University of Waterloo, Co-op Geography 4A, Work Terms Number 4 and 5, September 19, 89 pp. + appendices

WILLIAMS, G.A. and MILLER, M.M., 1979. 1980 undergraduate research participation program, Juneau Icefield, Alaska and the Atlin region, B.C.-Yukon, Canada: final report. Foundation for Glacier and Environmental Research, Pacific Science Center, Seattle, Washington and College of Mines and Earth Resources, University of Idaho, Moscow, Idaho, December, 49 pp.

WILLIAMS, F.M. and HUTTER, K., 1983. Thermal response of unconfined ice shelves to climatic conditions. Acta Mechanica, 48(**), 131-146

WOO, M.-K., 1985. Focus: hydrology of snow and ice. The Canadian Geographer, 29(2), Summer, 173-183

WOODSWORTH, G. (and Ricker, K.), 1980. Recent nomenclature changes by the Canadian Permanent Committee of Geographic (sic) Names: Coast Mtns 1979. The Canadian Alpine Journal, Vol.63, 84

WRIGHT, H.E., Jr, 1980. Surge moraines of the Klutlan Glacier, Yukon Territory, Canada: origin, wastage, vegetation succession, lake development, and application to the Late-Glacial of Minnesota. Quaternary Research, an Interdisciplinary Journal, 14(1), July, 2-18

YARNAL, B.M., 1982. The relationship between synoptic-scale atmospheric circulation and glacier mass balance in southwestern Canada. Ph.D. thesis, Department of Geography, Simon Fraser University, Burnaby, British Columbia, June, 213 pp.

YARNAL, B., 1984. Synoptic-scale atmospheric circulation over British Columbia in relation to the mass balance of Sentinel Glacier. Annals of the Association of American Geographers, 74(3), September, 375-392

YOUNG, G.J., 1980a. Formirovanie pechnogo stoka v lednikovom basseine v Skalistykh gorakh Kanady/Streamflow formation in a glacierized watershed in the Rocky Mountains, Canada. Materialy Gliatsiologicheskikh Issledovanii, Khronika, Obsuzhdeniia, Mezhduvedomstvennyi Geofizicheskii Komitet, Sektsiia Gliatsiologii, Institut Geografii, Academy Nauk SSSR/Data of Glaciological Studies, Chronicle, Discussion, Section of Glaciology of the Soviet Geophysical Committee and Institute of Geography, Academy of Sciences of the U.S.S.R., No.39, Moskva/Moscow, Iiuni/July, in Russian 55-62, in English 134-139

YOUNG, G.J., 1980b. Monitoring glacier outburst floods. Nordic Hydrology, 11(5), 285-300

YOUNG, G.J., 1980c. Pavodki na Iukone (Kanada), obuslovlennye proryvami lednikovo-podprudnykh ozer/The impact of floods from glacier-dammed lakes, Yukon, Canada. Materialy Gliatsiologicheskikh Issledovanii, Khronika, Obsuzhdeniia, Mezhduvedomstvennyi Geofizicheskii Komitet, Sektsiia Gliatsiologii, Institut Geografii, Academy Nauk SSSR/Data of Glaciological Studies, Chronicle, Discussion, Section of Glaciology of the Soviet Geophysical Committee and Institute of Geography, Academy of Sciences of the U.S.S.R., No.39, Moskva/Moscow, Iiuni/July, in Russian 101-107, in English 170-175

YOUNG, G.J., 1981a. The mass balance of Peyto Glacier, Alberta, Canada, 1965 to 1978. Arctic and Alpine Research, 13(3), August, 307-318

YOUNG, G.J. (Editor), 1982a. Glacial hydrology. Report GD-12, Glaciological Data, Glacial Hydrology, World Data Center A for Glaciology (Snow and Ice), Boulder, Colorado, March, 133 pp.

YOUNG, G.J., 1982b. Hydrological relationships in a glacierized mountain basin. In - Hydrological Aspects of Alpine and High Mountain Areas, J.W. Glen (Editor), Proceedings of the Exeter Symposium, 19-30 July 1982, IAHS Publication No.138, International Association of Hydrological Sciences, 51-59

YOUNG, G.J., 1983. Catastrophic floods: a case history from Yukon, Canada. In - Techniques for prediction of runoff from glacierized areas, G.J. Young (Editor), Draft report presented to Working Group on Prediction of Runoff from Glacierized Areas, International Commission on Snow and Ice, July, 115-121

YOUNG, G.J., 1985a. Canada case study: catastrophic floods. Techniques for prediction of runoff from glacierized areas, G.J. Young (Editor), IAHS Publication No.149, International Association of Hydrological Sciences, 137-143

YOUNG, G.J., 1985b. Glacier. In - Focus: hydrology of snow and ice, M.-K. Woo (Editor), The Canadian Geographer, 29(2), Summer, 176-177

YOUNG, G.J., 1985c. Overview. In - Techniques for prediction of runoff from glacierized areas, G.J. Young (Editor), IAHS Publication No.149, International Association of Hydrological Sciences, 3-23

YOUNG, G.J. (Editor), 1985d. Techniques for prediction of runoff from glacierized areas. IAHS Publication No.149, International Association of Hydrological Sciences, 149 pp.

YOUNG, G.J. and OMMANNEY, C.S.L., 1984. Canadian glacier hydrology and mass balance studies: a history of accomplishments and recommendations for future work. Geografiska Annaler, 66A(3), 169-182

ZUBOK, O.M., 1985a. Balans massy lednikov v basseine r. Iskut v sravnenii s balansom massy drugikh lednikov, issleduemykh na zapadnom poberezhe Kanady. Tezisy dokpadov, Balans Massy, Kolebaniya Lednikov i Lednikovy Stok, Mezhdunarodny Simpozium, 30 Sentyabrya - 5 Oktyabruya g., Alma-Ata, SSSR, Akademiya Nauk SSSR, Mezhduvedomstvenny Geofizicheskiy Komitet, Moskva, 13

ZUBOK, O.M., 1985b. Glacier mass balance in the Iskut River basin and comparison with other glaciers under study in the Canadian west coast. Abstracts, Glacier Mass-Balance, Fluctuations and Runoff, International Symposium, 20 September - 5 October 1985, Alma-Ata, U.S.S.R., Soviet Geophysical Committee, Academy of Sciences of the U.S.S.R., Moscow, 68-69

## 10.0: NAMES AND ADDRESSES OF CONTRIBUTORS AND OTHERS

Listed below are the names and addresses of all those to whom requests were sent for contributions to this report. The individual data sheets list the names of the principal investigators and compilers. Those wishing to obtain more detailed information on certain projects can contact them or write to the compiler of this report.

Dr W. Peter Adams
Executive Director
Association of Canadian Universities
for Northern Studies
130 Albert Street, Suite 1915
Ottawa, Ontario
K1P 5G4 CANADA

Alpine Club of Canada,
P.O. Box 1026,
Banff, Alberta, TOL OCO

Dr Bea Alt
Geological Survey of Canada
Energy, Mines and Resources Canada
880, Wellington Street
Ottawa, Ontario
K1A OE4 CANADA

Dr John T. Andrews
Department of Geology
University of Colorado
Boulder, Colorado
CO 80309 U. S. A.

Dr Weston Blake, Jr.
Terrain Sciences Division
Geological Survey of Canada
601, Booth Street
Ottawa, Ontario
K1A OE8 CANADA

Dr Raymond Bradley
Department of Geography
University of Massachusetts
Amherst, Massachusetts
MA 01003 U. S. A.

Jerry O.G. Charbonneau
Water Resources Branch
Inland Water Directorate
Environment Canada
Ottawa, Ontario
K1A OE7 CANADA

Dr Michael A. Church
Department of Geography
University of British Columbia
1984, West Mall
Vancouver, British Columbia
V6T 1W5 CANADA

Dr John J. Clague
Geological Survey of Canada
Cordilleran Geology Division
100 West Pender Street
Vancouver, British Columbia
V6B 1R8 CANADA

Dr Garry K.C. Clarke
Department of Geophysics and Astronomy
University of British Columbia
2075 Wesbrook Mall
Vancouver, British Columbia
V6T 1W5 CANADA

Mike Demuth
Surface Water Division
National Hydrology Research Institute
11, Innovation Boulevard
Saskatoon, Saskatchewan
S7N 3H5 CANADA

Joseph R. Desloges
Department of Geography
University of British Columbia
#217, 1984 West Mall
Vancouver, B.C.
V6T 1W5 CANADA

Dr John England
Department of Geography
University of Alberta
Edmonton, Alberta
T6G 2H4 CANADA

Dr David A. Fisher
Geological Survey of Canada
Energy, Mines and Resources Canada
880, Wellington Street
Ottawa, Ontario
K1A OE4 CANADA

Dr Derek C. Ford
Department of Geography
McMaster University
Hamilton, Ontario
L8S 4K1 CANADA

Dr Jim S. Gardner
Department of Geography
University of Waterloo
Waterloo, Ontario
N2L 3G1 CANADA

Dr Robert Gilbert
Department of Geography
Queen's University
Kingston, Ontario
K7L 3N6 CANADA

Dr Stuart A. Harris
Department of Geography
University of Calgary
Calgary, Alberta
T2N 1N4 CANADA

Dr Gerald Holdsworth
Surface Water Division
National Hydrology Research Institute
11, Innovation Boulevard
Saskatoon, Saskatchewan
S7N 3H5 CANADA

Dr Roger LeB. Hooke
310 Pillsbury Drive, S.E.
Department of Geology and Geophysics
University of Minnesota
Minneapolis, Minnesota
MN 55455 U. S. A.

Dr Lionel E. Jackson, Jr.
Institute of Sedimentary and
Petroleum Geology
3303 - 33rd Street N.W.
Calgary, Alberta
T2L 2A7 CANADA

Dr Martin O. Jeffries
Geophysical Institute,
University of Alaska
Fairbanks, Alaska
AK 99701 U. S. A.

Dr Peter G. Johnson
Department of Geography
Ottawa University
Ottawa, Ontario,
K1N 6N5 CANADA

Prof. Dr Lorenz King
Geographisches Institut
Justus Liebig-Universität
Senckenbergstrasse 1
Neues Schloss
D-6300 Giessen GERMANY

Dr R.A. Klassen
Terrain Sciences Division
Geological Survey of Canada
601, Booth Street
Ottawa, Ontario
K1A 0E8 CANADA

Dr R.M. Koerner
Geological Survey of Canada
Energy, Mines and Resources Canada
880 Wellington Street, Room 304
Ottawa, Ontario
K1A 0E4 CANADA

Dr Anne Letréguilly
Surface Water Division
National Hydrology Research Institute
11, Innovation Boulevard
Saskatoon, Saskatchewan
S7N 3H5

Dr Brian H. Luckman
Department of Geography
Social Science Centre
University of Western Ontario
London, Ontario
N6A 5C2 CANADA

Dan McIssac
Department of Botany
University of Alberta
Edmonton, Alberta
T6G 2EP CANADA

Dr Gifford H. Miller
Institute of Arctic & Alpine Research
University of Colorado
Boulder, Colorado
CO 80309 U. S. A.

Dr Maynard M. Miller, Dean
College of Mines and Earth Resources
University of Idaho
Moscow, Idaho
ID 83843 U. S. A.

Oleg Mokievsky-Zubok
Surface Water Division
National Hydrology Research Institute
Inland Water Directorate
Environment Canada
Ottawa, Ontario
K1A 0E7 CANADA

C. Simon L. Ommanney, Head
Cold Regions Section
Surface Water Division
National Hydrology Research Institute
11, Innovation Boulevard
Saskatoon, Saskatchewan
S7N 3H5 CANADA

Prof. Atsumu Ohmura
Geographisches Institut ETH
Universität Zürich-Irchel
Winterthurerstrasse 190
CH-8057 Zürich
SWITZERLAND

Dr Gerald D. Osborn
Department of Geology
University of Calgary
2920 - 24th Avenue, N.W.
Calgary, Alberta
T2N 1N4 CANADA

Dr W. Stan B. Paterson
Paterson Geophysics Inc.
P.O. Box 303,
Heriot Bay, British Columbia
V0P 1H0 CANADA

John Pickard
Department of Botany
University of Alberta
Edmonton, Alberta
T6G 2EP CANADA

John Power
Water Resources Branch
Inland Water Directorate
Environment Canada
Ottawa, Ontario
K1A 0E7 CANADA

Karl E. Ricker
868, 11th Street
West Vancouver, B.C.
V7T 2M2 CANADA

Dr Robert J. Rogerson
Department of Geography
Memorial University of Newfoundland
St. John's, Newfoundland
A1B 3X9 CANADA

Harold V. Serson
977, Stellycross Road,
Brentwood Bay, British Columbia
V0F 1A0 CANADA

Dr Roland Souchez
Laboratoire de Géomorphologie
Faculté des Sciences
Case postale 160
Université de Bruxelles
50 avenue F.D. Roosevelt
B-1050 Bruxelles
BELGIUM

Dr Norman D. Smith
Department of Geological Sciences (M/C 186)
University of Illinois at Chicago
P.O. Box 4348
Chicago, Illinois
IL 60680 U. S. A.

William A. Tupper
Surveying Department
British Columbia Institute of Technology
Burnaby, British Columbia
V5G 3H2 CANADA

D.F. VanDine
VanDine Geological Engineering Services
#3, 159 Clarence Street
Victoria, British Columbia
V8V 2H9 CANADA

Dr Gordon J. Young
Inland Waters Directorate
Environment Canada
Ottawa, Ontario
K1A 0E7 CANADA